Volume 5, Issue 3

ISSN 1996-9783

International Journal of Infection Control

Abstracts

Tenth Congress of the International Federation of Infection Control

8-11 October 2009
Vilnius, Lithuania

Tenth Congress of the International Federation of Infection Control (IFIC)

ABSTRACTS

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October 8–11, 2009
Reval Hotel Lietuva
Vilnius, Lithuania

Oral Presentations

THURSDAY

O1 Global strategies for antimicrobial resistance prevention and control

Gerald Dziekan

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The rapid emergence of drug-resistant pathogens - whether parasites, bacteria, or viruses - leads to increased treatment failure and growing reliance on second line and combination therapy, with increased potential for toxic side-effects. It also increases the cost of treatment, often beyond what can be afforded by patients in developing countries. Reduced investment in research and development of new classes of anti-infective drugs is also contributing to the decline of remaining treatment options for infectious diseases. The development of drug resistance is exacerbated and amplified by events that increase the selective pressure on pathogens. These include the misuse of anti-infective drugs in the treatment of human and animal illnesses and indiscriminate use in animal husbandry, aquaculture, and agriculture.

This development has been accelerated by a growing connectivity of regions and populations by the speed and volume of air travel, the way food is produced, and the way the environment is managed. The strategy to better contain anti-infective drug resistance necessitates more prudent use of antibiotics in human medicine, in animal medicine, and in animal husbandry/agriculture; and measures to prevent the spread of drug-resistant organisms, including stronger surveillance. Although these measures apply to both developed and developing countries, the balance between activities must be tailored to the quantity and patterns of anti-infective drug use.

The ultimate goal to combat anti-infective drug resistance must be: conservation of existing anti-infective drugs through prudent use, and investment in research and development both for new anti-infective drugs and for vaccines, the ultimate solution to infection control and drug resistance.

Building on previous work outlined in the "WHO Global Strategy for Containment of Antimicrobial Resistance", the WHO Patient Safety Programme will address anti-infective drug resistance at five levels: rational drug use and regulation; animal husbandry; research & development; surveillance, and infection prevention.

FRIDAY

Perform surveillance of structure, process and outcome indicators O2

Smilja Kalenic

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Background

Since 1990-ties there is a bylaw in Croatia for the prevention and control of healthcare-associated infections (HCAI), part of which is also a mandatory yearly report to Ministry of Health and Social Welfare. Until 2005, this report had only descriptive part about major outbreaks and main activities of hospital infection control committees. In 2006 this has changed to structured report for structure, process and outcome indicators.

Methods

A questionnaire was sent to all 64 hospitals, with three groups of questions: details about the structure of infection control in hospital; process indicators, and outcome indicators. Antiseptic use, sharps incidents and healthcare worker HBV/influenza vaccination status were process indicators, while surveillance of SSI, ICU infections, MRSA, CD, other alert organisms and outbreaks were outcome indicators. The questionnaires were analysed and reports discussed with hospital infection control staff.

Results

Response rate was 98-100%. First year the main structure problem was lack of infection control committee (ICC) structure (50% of hospitals), lack of infection control team (ICT) structure (59% o hospitals), and also lack of infection control nurse education (45% of hospitals). Even more, 77% of hospitals had no regular team meetings. Next years it was gradually improved (36% hospitals with incomplete ICC, 39% with incomplete ICT, 68% of hospitals without regular ICT meetings). Changes in process and outcome indicators will be presented during the Surveillance SIG meeting.

Conclusion

Mandatory reporting of HCAI control structure, process and outcome indicators and discussion of the summary reports with hospital infection control staff, has been shown as useful tool for the improvement of the HCAI control.

Perform surveillance of structure, process and outcome indicators

O3 H1N1: Lessons learned and moving forward

Jonathan Nguyen Van Tam

University of Nottingham, Nottingham, UK

The current 'swine flu' pandemic challenges established pandemic theory. It has emerged from an unexpected epicentre and involves a subtype of influenza A that is already in circulation as a seasonal virus (H1N1). Nevertheless it has behaved exactly as predicted in terms of international spread and already produced appreciable activity in the southern hemisphere winter season. This paper will discuss the national and international epidemiological picture to date, clinical features, and what can be expected (and what cannot yet be predicted) for the forthcoming winter season in the northern hemisphere.

National Performance Indicators: building on the foundation of sustainable & comparable infection control in Europe O4

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In order to establish a consensus on Standards and Performance Indicators (SPIs) in the European Union (EU), the World Health Organisation Regional Office for Europe led a working group in the DG SANCO funded Improving Patient Safety in Europe (IPSE) project to review existing guidelines, standards and indicators from infection control programmes in the EU An initial survey was performed in 2006 which provided a comprehensive background to lay a well funded basis to empower health system managers, policy-makers, public health specialists and health-care workers to understand, prioritise, develop and implement solutions in relation to competing health threats. National programmes existed in 72% for HCAI and 62% for Antimicrobial Stewardship (ASt), in some instances these have been in place for over 30 years. Specific laws exist for prevention and control for HCAI in 55% and for ASt 31% of countries. Reduction of HCAI and control of antimicrobial Resistance (AMR) is included in the government's health objectives in 62% and 59% of countries, respectively. However, in a third of these programmes there were no agreed objectives. Topics covered by these programmes varied enormously, areas such as hand hygiene, intravenous and urinary catheter related policies, rational antibiotic usage and IC precautions were not included in 20% of programmes. Surveillance of HCAI and AMR is considered compulsory in 53% of the countries. More than 70% of the countries have pre defined indicators

for rates of HCAI and AMR, however less than one third defined indicators to measure hand hygiene and standard precautions compliance. Based on the results of the survey it became clear, that the heterogeneous infection control levels among countries make a unique European Guideline on infection control in healthcare settings technically, politically and economically extremely difficult to achieve. However, to establish a consensus on SPIs was very well perceived. And member states were in agreement to use a novel and European comparable PI tool should be used in hospitals or nationally where such programmes are being initiated or can be rather improved. It will be presented the process to achieve agreement among all the participant countries, the developed and adapted local and national check list and the list of SPIs.

O5 The challenge of getting a tap-down and bottom-up approach to implementing infection control programmes in low resource settings

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Abstract

The challenge of getting a top-down and bottom-up approach to implementing Infection Control programmes in low resource settings

Background

Nosocomial or healthcare associated infections (HCAI), including infections acquired by health care workers, have a substantial impact on morbidity and mortality and add costs to patients' care. It is expected that HCAI will constitute an increasing proportion of the overall burden of disease in the society. For better control, consistent standards for monitoring and therapy should be used. In the Republic of Moldova the standards and guidance for Infection Prevention and Control (IPC) practices were in a limited and fragmented way.

Methodology

The study was carried out in five stages:

1. development of draft guidance on infection control;
2. development and validation of the survey questionnaire;
3. submission of the survey in the designated sections of the pilot institutions;
4. analysis of the questionnaires using SPSS program;
5. formulation of evidence based recommendations for a national IPC programme.

Results

Based on the key findings of the survey; the National Guidelines for IPC has been developed including training mechanisms for its dissemination and adherence at all levels. In the existing system HAI was under or no reported for a number of reasons, some related to the post-Soviet, some related to cultural issues. The new system calls for establishing infection control committees (ICC) at hospital level, and encourages the adaptation and development of infection control policies, implementation of IPC measures including monitoring and evaluation.

Conclusions

The national nosocomial IPC programme has been reorganized and ICCs were established in all hospitals. Simply stated, the ICC is the official route for informing hospital administration of infection control problems and accomplishments, such as outbreak investigations, new national regulations, policy and procedures compliance and routine data monitoring. The reorganization of the national nosocomial IPC programme will lay the basis for a feasible and sustainable IPC practice at hospital level.

Infection Prevention and Control Core Components O6

Carmem Pessoa-Da-Silva

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Health care-associated infections (HAI) are an important public health problem because they occur frequently, cause morbidity and mortality and

represent a significant burden among patients, health-care workers and health systems. HAI occur worldwide and affect all countries, irrespective of their degree of development. A considerable proportion of the burden of disease attributable to HAI is preventable and many interventions that have been proven to be effective are of low cost. In addition, if outbreaks hit health care settings without a culture of safe practices, the risk of disruption to health care system can be high. Among many important lessons derived from the SARS epidemics, being prepared and having a culture of safe health care practices is key to coping with outbreak situations.

Countries and health-care facilities that have established Infection Prevention and Control programmes will be better able to contribute to the prevention of endemic infections associated with health care and to the better management of outbreaks that cause a high morbidity, mortality and economic burden to patients and institutions. Therefore, establishing and strengthening infection prevention and control programmes at national level and in every health facility is essential for a successful response to epidemics and reducing the burden of endemic infections associated with health care. A huge gap still exists between the knowledge accumulated over the past decades and implementation of infection control practices. This gap is even deeper in poor-resource settings with devastating consequences, and breaches in infection control measures undermine every advance and investment in health care.

O7 MRSA screening - a targeted approach?

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Abstract not available

MDR Gram negatives - is screening appropriate? O8

Gary French

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Patients admitted to hospitals and, in particular, adult and paediatric intensive care units, may be colonised with multi-drug resistant Gram negative bacteria (MDR-GNBs). This problem has been greatly aggravated by the emergence of MDR-GNBs producing extended spectrum beta-lactamases in the community. Screening patients at admission for carriage of MDR-GNBs theoretically allows early implementation of appropriate isolation and (where necessary) appropriate choice of empirical antibiotic therapy. Screening of in-patients may also be done to identify asymptomatic carriers during outbreaks.

The usefulness and cost effectiveness of these approaches is debated, especially with increasing community acquisition of MDR-GNBs. There are also questions over which organisms to identify, which screening methods to use, which sites to sample, what actions to take when a positive result is obtained and whether staff should ever be screened. These issues will be discussed and potential guidelines put up for debate.

Screening for VRE - a cost effective approach? O9

Hilary Humphreys

Royal College of Surgeons, Dublin, Ireland

Although most patients with VRE are colonized, systemic sepsis such as bloodstream infection (BSI) occurs and is associated with significant morbidity and mortality. Local and national guidelines for prevention place heavy emphasis on the importance of screening as this identifies which patients should be isolated or cohorted. However, there are different laboratory approaches to VRE detection with varying sensitivities and specificities, and it is not clear how wide any screening programme should be. In a non-endemic setting, where an outbreak has occurred, extensive hospital-wide screening can prevent endemnicity and limit the VRE outbreak. Where

VRE is endemic, it is probably prudent to focus VRE screening to those clinical areas where the impact of VRE infection is likely to be greatest, e.g. intensive care units, renal dialysis units and oncology/haematology units. The literature suggests that enhanced screening to limit the spread of VRE and in particular to reduce VRE BSI is cost effective with estimated savings of up to $0.5m depending upon the size of the healthcare facility and the number of infections prevented. Greater clarification is required on the extent to which screening is effective in the endemic setting. In particular, the contribution it makes to overall cost savings and to reducing systemic infections with their associated costs and clinical consequences, needs to be investigated further in a variety of settings.

O10 What are routine practices and why do they need to be routine?

Carol Goldman

Consultant, Toronto, Canada

This session will give an overview of the Canadian Routine Practices/Additional Precautions (RPAP) system, including a brief history, content and similarities/differences with Standard Precautions (SP) and other systems. Defining a system is not enough, however. Healthcare workers (HCWs) also need to know what to do and when and how to do it, and materials and systems need to be in place to enable them to implement RP. The Canadian Community and Hospital Infection Control Association (CHICA-Canada) has articulated core competencies in infection prevention and control for HCWs to help infection control professionals (ICPs) and educators focus on the knowledge and skills HCWs need to protect their patients and themselves from healthcare associated infections. This session will introduce attendees to the core competencies relevant to RP and hand hygiene, which is one aspect of RP.

Benefits to having HCWs implement RP consistently and appropriately will reduce healthcare associated infections, help develop HCWs' confidence in their ability to protect their patients and themselves, and promote appropriate use of personal protective equipment, all of which have implications for controlling healthcare costs. Although RP and SP have been in existence for over a decade, we know that adherence with recommended practices is variable. Issues associated with low adherence will be identified, setting the context for the strategies discussed in the subsequent two presentations on making Routine Practices routine.

Visibility, support and supplies: the foundation for making routine practices routine O11

Catherine Munford

Victoria General Hospital, Victoria, Canada

Healthcare workers (HCWs) are taught about Routine Practices (RP) in their basic education or training, but are not always able to apply these practices in their work setting. This session will discuss three strategies that can make a difference to making Routine Practices routine. The visible presence of a credible infection control professional (ICP) serves not only as a reminder of the importance of infection prevention and control, but, more importantly, allows HCWs easy access to the ICP to get questions answered and best practices reinforced. Administrative support helps to ensure that needs in the organization are identified and interventions/resources implemented to meet those needs. Access to supplies is one such resource. This session will elaborate on each, including examples of strategies to promote visibility and credibility, to enlist administrative support and to address limited resources.

Education, Messages and Tools to Make a Difference O12

Donna Moralejo

Memorial University School of Nursing, St John's, Newfoundland, Canada

Materials and systems need to be in place for Routine Practices (RP) to be implemented, but healthcare workers (HCWs) also need reinforcement of their knowledge and skills if they are to implement RP

appropriately and consistently. This session will focus on three additional strategies that can make a difference. Different opportunities for education in the workplace will be described (orientation, continuing education, and teachable moments), with examples of strategies that can be used to engage HCWs in their learning, including problem solving and practice. The importance of a clear, consistent, simple message will also be discussed, with examples of how this might be achieved given the complexity of RP with its multiple components. The main emphasis of the session will be on the third strategy; attendees will be introduced to a set of Assessment and Educational Tools for RP recently developed by the Public Health Agency of Canada. The Assessment Tools, which include an algorithm and checklist, were designed to help HCWs identify appropriate precautions to take for given situations, with an emphasis on the decision making process. The Educational Tools, which include case scenarios, were designed to help users become familiar with the Assessment Tools and their application. The session will conclude with a brief summary of how infection control professionals can use the strategies described to help make Routine Practices, and similarly Standard Precautions, routine.

O13 Organisation of infection control, hand hygiene and MRSA in Denmark

Doris Laugesen[1], Kirsten Pedersen[2], Anni Juhl-Jorgensen[3]

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With this presentation 3 Danish Infection Control Nurses will invite you to hear about the organisation of infection control in Denmark. We are members of the board of DSFH, which is the Danish Society For Infection Control Nurses and we will tell you about our work now and visions for the future. Further more you can hear about two main topics in our daily work, hand hygiene and MRSA. Our presentation will focus on 5 main themes:

Organisation of the infection control work in Denmark on a national level

- Legistation and IKAS, Danish Institute for Quality and Accreditation in Healtcare
- Organisation diagram
- Regions and councils

DSFH, Danish Society For Infection Control Nurses

- Object/aim
- History
- Collaborators
- Influence on the strategic and national level
  - National standards
  - The National Board of Health, Hygiene committee
  - Medical specialists boards
  - Danish National Clearing House of Clinical Guidelines
  - European Union collaboration
  - Nordic Society For Infection Control Nurses
  - Scholarships
  - Annual meetings

Hand hygiene, newest national and regional developement

- National standard
- DDKM, Danish Healthcare Quality Program
- The National Board of Health, hand hygiene campaign WHO – Clean Care is Safer Care
- State Serum Institute, handhygiene by e-learning
- Research
- Regional iniatives
- Purchasing of hand hygiene products

MRSA, implementing the national strategy and the effect

- Contents of the strategy
  - Seek and destroy
  - Primary and hospital health care
  - Diagram
- Consequences, effect, newest data
  - MRSA, units
  - Proactive work
  - Seek and destroy
- Patients

DSFH´s role and vision for the future

O14 Experience with the National Program for Infection Control in the Kyrgyz Republic

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The infection control (IC) program began in 2002 and focused so far on surgical departments of hospitals. It comprised of developing modern national guidelines for infection control and intensively supporting their implementation with project support in a pilot of five hospitals of one region.

Key elements of interventions were: hand hygiene, surveillance of Surgical Site Infection (SSI), antibiotic resistance testing and database, perioperative antibiotic prophylaxis (PAP), development of IC infrastructure (IC team, IC nurse) and Waste management scheme. A number of innovative instruments were introduced: point prevalence investigation of SSI; prescription form for antibiotics that doubles as a instrument for documenting SSI; assessment tool of IC measures in hospitals.

Results

Point prevalence showed a drop of SSI from 55% (2004) to 11% (2008) in the pilot hospitals. PAP is correctly being applied in 88,6% of surgeries. Antibiotic usage has decreased in 2 times and saves the regional hospital 3,6 USD per patient. The overall adherence of pilot hospitals to the indicators in the assessment tool has risen to 85%. A waste management scheme, based on needle cutters and autoclaving infectious material, was developed that is appropriate and economically sustainable for rural hospitals. The pilot has led to about 40 normative documents being released for application in the whole country. The intensive support for implementation is now being rolled out through other regions.

Conclusion

The received results are confirmed that well organized Infection Control Program is one of most economically effective ways of decreasing of nosocomial sickness rate.

Delivering the infection message: addressing communication O15

Claire Farrugia

Mater Dei Hospital, Msida, Malta

Introduction

Delivering timely information is important and it remains a major challenge for infection control teams (ICT) worldwide. This study investigated the communication flow between the ICT and healthcare workers (HCWs) at St. Luke's Hospital, Malta.

Methods

The study, performed in 2007, used an exploratory descriptive research design to study relevant sources, channels, needs and preferences of infection control information as identified by HCWs. Furthermore, the strengths and weaknesses in communication with the ICT were explored. Data was collected from a stratified random sample of nurses (n=143) and doctors (n=63) working within inpatient wards using a self administered questionnaire.

Results

A response rate of 97% was obtained. HCW felt most comfortable receiving information from members of the same profession. Information transfer was mainly vertical up and down the hierarchy. Respondents preferred to receive information through educational activities (35%, n=69) and through face-to-face contact (31%, n=62). Electronic channels (email and intranet) were ranked least preferable. However only 41% (n=81) had regular access to a computer system at work. The majority of respondents 91% (n=181) trusted the information by the ICT and 60% (n=118) regarded it as being consistent. Nevertheless, this did

not guarantee constant compliance; 54% (n=106) of respondents implement infection control measures only when they perceived a risk for their health. Greater presence of the infection control team on the wards was recommended.

Conclusion

Despite the electronic age, the study confirms face-to-face contact between ICTs and HCWs as the most effective way of disseminating infection control information.

O16 Development of a proxy surveillance for intravenous line-related bacteremia in remote Indonesia

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Introduction

Very common usage of intravenous line in remote Indonesia (92% of adult inpatients) and poor asepsis provide high potential for line-related bacteremia. Since very limited laboratory support prohibited bacteremia surveillance as prescribed for high-resourced countries, we developed a proxy surveillance to monitor bacteremia risk with much less technology and cost.

Intervention

Phlebitis and extravasation, local complications of intravenous lines, were chosen as proxy evidence of poor line management causing high risk for bacteremia. In the absence of any evidence-based guidelines, we developed a new diagnostic criteria that considered the local epidemiology of line-related bacteremia, existing clinical practices and limited human resources with minimal surveillance experience. After a trial at two hospitals and eight clinics in remote Indonesia (n=1097 intravenous lines), the new criteria for phlebitis and extravasation were assessed against those of the American Intravenous Nursing Society (INS).

Results

The new criteria had 95% sensitivity, 100% specificity, 100% positive predictive value and 86% negative predictive value, and ruled in 268/1097 cases (24%) not classifiable by INS criteria. The local nursing staff found the new criteria clear, free from subjective measures like pain, and easy to implement routinely.

Conclusion

Our diagnostic criteria for intravenous line-related local complications are suitable for use in low-resourced remote Indonesian setting as a proxy for line-related bacteremia risk. Proxy (or process) surveillance is more feasible than outcome (infection) surveillance for low-resourced settings. Methodological principles underlying a proxy surveillance design are: evidence base of the proxy measurement, the target outcome's local epidemiology and contextual clinical issues.

Incidence of MRSA at admission to Hospital – a prospective four year study O17

Ann Higgins

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Background

The proportion of patients colonised with MRSA in a hospital is recognised as one of the most important factors influencing MRSA acquisiton and is often referred to as colonisation pressure. Indeed many programmes aimed at controling MRSA are founded on targeting this previously unknown reservoir for MRSA to prevent further spread and reduce risk of infection in the colonised individual.

Although a small number of studies exist providing data in the UK and Ireland, there are few that examine the incidence of MRSA colonisation in whole hospitals. In Ireland, the Department of Health and Children recommends targeted admission screening for MRSA. In the UK, screening all admissions has been recommended by the Department of Health. A debate is underway as to which method is the most cost effective and beneficial.

Objectives

This study, examined the incidence of MRSA in one Irish hospital using targeted screening adapted from SARI guidelines to determine if patients considered 'at increased risk' of MRSA at admission in other countries are similar in Ireland.

Designand Methods

Rates of MRSA infection and colonization were monitored for all patients admitted to the hospital in a prospective study undertaken over four years from January 2005 until December 2008.

Results

While 4.75% of those screened were MRSA positive, Incidence varied from as low as 0.9% to 16% depending on reason for admission. Age over 80 years was found to be a significant risk.

O18 ISDP health and hygiene program in Pakistan

Altaf Ahmed

Infectious Disease Society, Karachi, Pakistan

Introduction

250,000 children in Pakistan die of diarrhea every year. 670,000 children are absent from schools across Pakistan due to illnesses.

Intervention

In 2004 IDSP (Infectious Diseases Society of Pakistan) started "Sehat-o-Safai" Program, – a campaign for the improvement of hygiene and well being among school children in Pakistan. Specifically, the program is intended to promote hygiene habits, including but not limited to hand-washing with soap, by communicating to the school children and teachers, through various channels including lectures, Radio, Print and advertising, all possible medical and scientific educational information related to these habits.

Other partners included in this program are Pakistan Medical Association and Safe Guard soap manufacturer. IDSP lead this program and provide support by motivating city councilors, and school heads. Schools celebrate health days by holding poster competition on health and hygiene. IDSP trained doctors give health and hygiene lectures for young children.

In 2008 IDSP celebrated "Global Hand washing day" along with other stake holders.

Result and Conclusion

Uptil now 5 million children in over 14000 schools across Pakistan has been covered. This is the single largest health and hygiene education program in Pakistan. IDSP believes that, promotion of health and hygiene and practicing hand washing among school children is the most powerful tool for their survival and it will be continued.

Modification of WHO guidelines for pandemic planning to match local context in St. Lucia, Caribbean O19

Irena Bakunas-Kenneley, Elizabeth A Madigan

Case Western Reserve University, Cleveland Ohio, USA

Elizabeth Madigan, RN, PhD, FAAN and Irena Bakunas-Kenneley, APRN-BC, PhD, CIC traveled to St. Lucia between May 31 and June 14, 2008. Training materials from the WHO document, "2007 World Health Organization Interim Guidelines Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care" were reviewed. The intent was the facilitation of the WHO materials to be appropriately modified to match the local context by local experts. In St. Lucia, the work and meetings were conducted in collaboration with the Department of Health Sciences at Sir Arthur Lewis Community College (SALCC).

Two extensive meetings were held with nursing representatives from Victoria Hospital, St. Jude Hospital, Soufriere Hospital, Rodney Bay Polyclinic, Dennery Hospital and the community health centers. Nurses attending included nurses from the emergency departments, infection control, faculty from SALCC, community health centers, and a physician. Overall

impressions of both sets of materials were positive. The wording levels were identified as appropriate for all levels of health care workers. The exercises were seen as important in making the instruction relevant for the community health workers and were identified as feasible for many types of training settings. The materials were identified as helpful for care of seasonal influenza as well as during pandemic and unusual events (e.g. H5N1).

As expected, there were several areas that the St. Lucian experts identified as needing changes to be more understandable and culturally appropriate. Adaptations in the following areas were identified: the metric system, terminology issues, and use of hand sanitizer.

O20 Empowering surgical nurses improves compliance rates for antibiotic prophylaxis after cesarian birth

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Aim
This paper is a report of a study of the effect of empowering surgical nurses to ensure that patients receive antibiotic prophylaxis after cesarean birth.

Background
Despite the consensus that single dose antibiotic prophylaxis is beneficial for women have either elective or non-elective cesarean delivery, hospitals need methods to increase compliance rates.

Method
In a study in Israel in 2007 surgical nurses were empowered to ensure that a single dose of cefazolin was given to the mother after cord clamping. A computerized system was used to identify women having cesarean births, cultures sent and culture results. Compliance was determined by chart review. Rates of compliance, suspected wound infections, and confirmed wound infections in 2007 were compared to rates in 2006 before the policy change. Relative risks were calculated dividing 2007 rates by those in 2006, and 95% confidence intervals were calculated using Taylor's series that does not assume a normal distribution. Statistical significance was assessed using the chi-square test.

Findings
The compliance rate was increased from 25% in 2006 to 100% in 2007 (chi-square test, $p < 0.001$). Suspected wound infection rates decreased from 16.8% (186/1104) to 12.6% (137/1089) after the intervention (relative risk 0.75, 95% confidence interval, 0.61-0.92).

Conclusion
Surgical nurses can ensure universal compliance for antibiotic prophylaxis in women after cesarean birth, leading to a reduction in wound infections.

O21 Skin tolerance assessment of health workers after use of Alcohol-Based Hand-Rub Solutions (ABHRS)

Alexis Hautemaniere
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The use of ABHRS in hospitals has been associated with increased hand hygiene compliance and reduced rates of nosocomial infection. Moreover the health workers have skin problems with antiseptic soap. The aim of this study was to assess the hand skin condition after application of ABHRS.

Material and method
41 health workers of the university hospital of Nancy were included, 53.5% was a nurse, 26.5% nurse assistant, the range of age is 24 - 57 with the mean at 41 years, the female represent 80 %, 70% have a clear skin, clear eyes, clear or brown hair. The percentage of hydration, the pH of the skin and the rate of sebum were measured on the back and the palm of the dominant hand before and after validated the practice of rubbing with ABHRS.

Results
The skin hydration increase after hand rubbing with ABHRS: + 5.6% for the back of hand ($p = 0,002$) and + 1.9% for the palm ($p = 0, 22$). pH value before

rubbing with ABHRS was 5.3 on the palm and 5.2 on the back, the pH decrease to -0.2 percent for tow sites of assessment (p= 0.01 and p= 0.006 respectively).The rate of sebum was increased after rubbing, in both the palm and back of hand, but not statistically significant.

Conclusion

This study shows that the use of ABHRS improves the skin hydration. The health workers describe a good skin tolerance in 17 % excellent, 41.5% good and 26.8% middle.

O22 Outcomes of Bloodstream infections with Extended-Spectrum-Beta-Lactamase-Producing *Klebsiella pneumoniae* in Hungarian hospitals

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Introduction

ESBL-producing Enterobacteriacae pose an increasing problem in hospital enviroments and have become one of the most important causes of nosocomial infections worldwide. *Klebsiella pneumoniae* has been the most common ESBL-produing pathogen in Hungary, comprising 75% of all ESBL-producing Enterobacteriacae.

Aims

To investigate outcomes of bloodstream infections (BSI) caused by ESBL-producing *K. pneumoniae* in comperison with BSIs caused by non-ESBL-producing K.pneumoniae.

Methods

Hospital-wide BSI surveillance is one module of the Hungarian National Nosocomial Surveillance System. Statisitical analysis of BSIs caused by ESBL-producing *K. pneumoniae* (cases) and by non-ESBL-producing *K. pneumoniae* (controls)was performed on data obtained in our surveillance system between January 2005 and December 2008. We performed a retrospective cohort study of randomly selected 100 cases and controls. Studied outcomes were crude mortality, mortality due to infection and delay in appropriate therapy (DAT).

Results

36% of patiens with ESBL-producing *K. pneumoniae* died versus 23% of controls (OR: 2,5 95% CI: 1.0-5.4 p=0.02). Eight-teen % of death in cases versus 9% of controls could be attributed to infection (OR: 5.0 95% CI: 1.5-16.2 p=0.006). Delay in the introduction of appropriate antibiotic therapy was observed in 44% of cases versus 19% of controls (OR: 3.4 95% CI: 1.6-7.3 p=0.001)

Conclusions

ESBL production was associated with severe outcomes including higher overall and infection-related mortality and delay in appropriate therapy. Beside infection control measures early identification and antibiotic resistance profiling of the infecting pathogen is salient in the management of BSIs caused by ESBL-producing *K. pneumoniae*.

Control of increased prevalence of multidrug-resistant *K. pneumoniae* by ribotyping O23

Maria Seier-Petersen, AMH Larsen, LP Andersen

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Introduction/Aim

A dramatic increase in the incidence rate of patients with multidrug-resistant (MDR) *Klebsiella pneumoniae* has been observed from 2006 (11%) to 2007 (26%) at Rigshospitalet, Copenhagen, and was still high in 2008 (24%). A similar increase has been found in several other Danish hospitals and in some cases a clonal spread of *K. pneumoniae* has been observed. The aim of this study was to investigate whether the increase in 2007 was due to clonal dissemination of *K. pneumoniae*, using a Riboprinter for genotyping.

Methods
From 2007 to 2008 all strains of MDR K. pneumoniae were collected for ribotyping. Ribotyping was carried out by an automatic Riboprinter (RiboPrinter from DuPont Qualicon, USA).

Results
MDR *K. pneumoniae* strains from 57 patients in 2007 and 49 patients in 2008 were ribotyped and found to constitute 51 and 45 different ribotypes respectively. 75% (n=38) in 2007 and 76% (n=34) in 2008 of the ribotypes were only found in one patient. 67% (n=38) and 71% (n=35) of the patients were infected with only one *K. pneumoniae* ribotype.

Conclusions
The majority of infections with MDR *K. pneumoniae* at Rigshospitalet were sporadic cases corresponding to 75% in 2007 and 76% in 2008. Epidemic cases corresponded to 25% in 2007 and 24% in 2008, and included five minor clonal outbreaks in the period 2007 to 2008 (>4 patients per ribotype). The majority of patients (67%) were only infected with one *K. pneumoniae* ribotype.

O24 Multicenter Surveillance for Hospital Acquired Infection by Carbapenem-Resistant *Acinetobacter* Producing blaIMP Metallo Beta Lactamase

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Ain Shams University Hospitals, Cairo, Egypt

Background
Acinetobacter spp has emerged in the last decades as a major cause of healthcare-associated infections and nosocomial outbreaks. An increasing carbapenem-resistant *Acinetobacter* isolates mediated by acquired metalo-beta lactamases are reported worldwide. Resistance rates can vary according to the country and the individual hospital.

Objective
The aim of this study was to demonstrate and compare the rate of *Acinetobacter* infection in different Ain Shams University Hospitals, general Teaching Hospitals (ASUH) 2400 beds, and A specialized private Hospital (ASUSH) 1000 beds, and the pattern of antibiotic resistance with molecular characterization of blaIMP gene.

Methods
A prospective study was conducted in year 2008. All the specimens were subjected to routine culture, identification and antibiotic susceptibility test by disc diffusion method and microscan automated analyzer. carbapenem resistant isolates were further studied by PCR for the detection of metallo-b-lactamase gene (blaIMP).

Results
The rate of *Acinetobacter* spp isolation was 8.8% and 5.6% respectively. In ASUH *Acinetobacter* spp. were isolated from surgical units (53.1%), intensive-care units (26%) and medical wards (14%) However, In ASUSH *Acinetobacter* spp. were mainly isolated from ICU (61%), surgical units (25%), and medical wards (15.6%). Carbapenems still represent the treatment of choice, followed by Aminoglycosides then Quinolones. Almost 75.5 % Carbapenems resistant *Acinetobacter* isolates, expressed blaIMP gene.

Conclusions
The high *Acinetobacter* Carbapenem resistant rates demonstrate an existing need for infection prevention measures. Application of a reasonable antibiotic policy is considered an important aspect of preventing the spread of resistant strains. The ongoing surveillance will enable hospital staff to monitor trends over time.

O25 Bedpan Disinfectors: Human Factors Analysis and Work Place Design to Enhance Cleaning and Disinfection

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Introduction

Bedpan decontaminators (BPDs) can be improperly used and may then act as potential sources of pathogenic organisms. As part of a strategy to decrease *C. difficile* cases at this tertiary care institution, the Infection Control Team examined 59 BPDs documenting factors associated with their use that could possibly contribute to the acquisition of a healthcare acquired infection.

Interventions

An initial inspection of "clean" bedpans conducted by Infection Control identified 109 (20%) visibly contaminated (baked stool) bedpans. Maintenance recorded 800 hours of BPD repairs in a six-month period. A multidisciplinary team including maintenance, nursing, housekeeping and infection control identified several factors that contributed to this unacceptable condition. These included unfilled detergent dispensers, use of the quick-wash cycles, double stacking of items, and use of inappropriate cleaning agents. Pictorial directions, emphasis on not putting heavy paper items in machines, immediate feedback by maintenance and documentation of BPD inspections were implemented. All machines were defaulted to the intense detergent cycle. A Human Factors Specialist was engaged to assist with addressing other impediments to proper use of the BPDs.

Results

Reinspection of 369 bedpans revealed that 27% remained soiled. Interestingly, a specific bedpan model was implicated whereas other models were now clean. The multidisciplinary team continues to address the machine, equipment, and human factors issues contributing to the problem.

Conclusions

Mechanical, design and human factors must be addressed when investigating the proper use of hospital equipment. A multidisciplinary approach that now includes Logistics continues to develop a "mistake-proof" work design for BPDs.

Caring for each patient: a physician and researcher perspective on the impact of non-vented, closed systems in hospitals O26

Victor D Rosenthal [1], Rodney M Donlan [2]
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Burden of BSI in low income countries. Impact of Interventions

Vascular access poses significant potential risks of iatrogenic complications in general, but in particular, of central line-associated bloodstream infections (CLAB). Almost 60% of all types of nosocomial bacteremia are originated by some form of vascular access. For this reason, this talk will discuss the current situation and mention intensive care practices that increasingly focus on the development of reliable and safe vascular access procedures, which have often been underestimated.

Studies determined that central line-associated bloodstream infections (CLAB) are related to excess attributable mortality ranging up to 35% and demonstrated that CLAB impact on patient outcomes was related to an increase in length of stay and extra healthcare costs, amounting to US$30,000 per case.

In most cases, CLAB can be prevented. Thus, the lecture will aim to assess the impact of hospital policies and care procedures that should be directed toward the adoption of preventive measures, rather than merely the identification and treatment of CLAB.

During the past fifteen years, there have been major advances in understanding the epidemiology and pathogenesis of CLAB. Data collected by The International Nosocomial Infection Control Consortium (INICC) will be presented. INICC is an international non-profit, open, multi-center, collaborative healthcare-associated infection control program with a surveillance system based on that of the U.S. National Healthcare Safety Network (NHSN, formerly the National Nosocomial Infection Surveillance system (NNIS). The symposium will encourage attendees' active participation in order to discuss how to improve the safety and quality of health care through implementation of systematized programs to reduce rates of HAI, associated mortality, excess lengths of stay, excess costs and bacterial resistance.

Biofilms in intravascular catheters, their role in infection and new treatment strategies

Biofilms on indwelling medical devices result in significant morbidity and mortality and may have a substantial impact on healthcare delivery. Microorganisms within biofilms may elicit disease processes by detachment of individual cells or aggregates from device surfaces, production of endotoxins and other cellular components, or by providing a niche for the development of antimicrobial resistant organisms. Because systemic antimicrobial treatment may have limited efficacy against biofilms on indwelling devices, approaches that directly target the biofilm on the device surface may be useful. One example is the antimicrobial lock treatment in which a colonized indwelling catheter is instilled with a high concentration of an antimicrobial agent for a dwell time sufficient to eradicate the biofilm. New treatments that incorporate agents not classified as antibiotics appear to effectively eradicate biofilms in *in vitro* models and should be evaluated in animal and patient studies to determine their potential to control biofilms and reduce rates of device-associated infections.

Prevention and control of resistant Gram negatives O27

Ulrika Ransjö, Ann Tammelin

Uppsala University Hospital, Uppsala, Sweden

The workshop will be introduced with two short lectures, one concerning ESBL- producing Enterobacteriaceae and the other concerning environmental bacteria such as *Acinetobacter*, *Pseudomonas* and *Sphingotrophomonas*. Risk factors for patients, procedures and construction will be presented.

The audience will then be divided into four groups, each presented with a case history which could be one patient, an accumulation of cases in a ward or a hospital. The groups will be given details about the cases on request, and should attempt to reach a solution of the cases which they will then present to the whole audience.

Near misses in infection control: improving patient safety by learning from errors O28

Ossama Rasslan

Ain Shams University, Cairo, Egypt

Near Miss is a situation in which a medical error has been found and stopped before affecting a patient . It's an incident where no immediate harm, loss or damage was suffered, but if not detected could have led to an adverse event. Near misses provide an opportunity to learn proactively from what some consider free lessons. Large numbers of near misses provide helpful data about the nature, frequency, and types of safety issues. Telling stories about near misses also is a powerful approach to sharing clinical knowledge. Sharing near-miss data is a critical strategy in efforts to protect patients from injuries caused by medical errors. In relation to Infection Control, adverse events or near misses must be reported to ensure that further incidents are, where possible prevented.

An introductory talk of about 20 minutes will be presented comprising the following:

- Objectives and methodology of the workshop
- Scope and magnitude of the problem of the near misses among patient safety issues
- Some near miss stories to learn from real-life experiences and help formulate strategies to avoid or minimize harm

Attendants will be divided into groups of 10s, and each group will be allowed 20 min for discussions. Each group will appoint a facilitator and a reporter. A guide will be given to each group, comprising the following:

- Tell a near miss in your healthcare facilities to show the magnitude of the problem in your country
- Reach an agreement within the group about one of these near misses, and conduct a root cause analysis
- Formulate the lessons learnt from such event and develop recommendations to ensure that further incidents might be avoided

The reporter of each group will be allowed 3-5 minutes to present the group consensus.

At the end, the speaker will wrap up the meeting by how to learn from mistakes, establish the safety culture and improve the patient safety.

O29 Basic Requirements of Infection Control Education

Gayle K Gilmore

Infection Control Education and Consultation, Duluth, Minnesota, USA

As adults, our methods of learning differ from children. Understanding the basic principles of adult education makes it easier for us to learn and improves the outcome of our infection control education.

In this session, we will review several theories of adult learning and apply them to the education and training of healthcare workers.

Other topics that will be discussed include educational needs assessments, writing goals and objectives, basic principles of effective teaching, and methods of evaluation.

A variety of methods of teaching infection control practices will be presented and additional ideas will be sought from the attendees of the session. A review of training tools and the effective use of various tools will be discussed.

"Learning is a way to transform knowledge, insights, and skills into behaviour. Adult learners are unique. They seek out learning experiences to satisfy a personally perceived need based on past experiences. The more success adult learners have, the more likely they are to willingly seek out learning experiences. Healthcare's growing complexity and rapid change require that theories of learning be incorporated into a trans-cultural educational experience, which addresses issues of literacy, cultural diversity, multiple-skilled workers, and technological advances."

Antimicrobial activity of disinfectants containing glucoprotamin O30

Stefan Tyski

National Medicines Institute and Warsaw Medical University, Warsaw, Poland

Two disinfectants containing glucoprotamin as active substance, but of different compositions and applications: Incidin Plus for surface disinfection and Sekusept Plus for medical devices disinfection, were investigated in order to analyze the antimicrobial activity. Standard bacterial and fungal strains recommended by European Standards for testing bactericidal and fungicidal activity of chemical disinfectants were used in the study. Besides, sixty clinical strains, each coming from different patient, 10 isolates from each group of: *Enterobacter cloacae*, *Proteus mirabilis* + *Proteus vulgaris*, *Acinetobacter baumanii*, *Pseudomonas aeruginosa*, methicillin resistant *Staphylococcus aureus* and *Enterococcus faecalis* + *Enterococcus faecium*, with different susceptibility to antibiotics and

chemotherapeutics, mostly multi drug resistant, isolated during routine clinical microbiological investigations from different specimens of hospitalized patients were included in the study. Additionally, 184 clinical fungal strains, mostly *Candida spp*. (n=133) and *Trichophyton spp*. (n=24) were included in this study.

Basic antimicrobial activity was evaluated according to EN 1040:2005 (bactericidal activity - phase 1) and EN 1275:2005 (fungicidal activity - phase 1). Analyzing application of disinfectants in high level contaminated medical area [dirty conditions - 3,0 g/l bovine albumin solution and 3,0 % erythrocytes, in the test], the following standards were applied: EN 13727: 2003 (quantitative suspension test for the evaluation of bactericidal activity - phase 2, step 1) and EN 14561: 2006 (quantitative carrier test for the evaluation of bactericidal activity - phase 2, step 2) - this method involved frosted glass plate carriers.

Glucoprotamin proved to be a very effective and rapidly acting antibacterial and antifungal agent. Incidin Plus and Sekusept Plus complying basic bactericidal standard just after 1 min - all analyzed clinical bacterial isolates were destroyed. Fungicidal activity of Incidin Plus was also very strong - after 5 min of contact with clinical fungal isolates, the requirements of the EN 1275 were fulfill. Applied practical conditions: high level soiling and carriers did not influence bactericidal activity – bacteria cells counts of 30 analyzed different bacterial clinical strains were reduced at least of 5 log (cfu/ml) just after 5 min when Sekusept Plus 1.5% and Incidin Plus 2.0% were used.

O31 Efficacy of Disinfectants against Mycobacteria

Bernhard Meyer

Ecolab GmbH&Co OHG, Düsseldorf, Germany

Mycobacteria are generally regarded the second most resistant infectious bacterial agents. Only bacterial endospores are more resistant to disinfectants and antiseptics. This is due to the unique structure of their cell wall. Extremely hydrophobic mycolic acids inhibit penetration of the cell wall by chemical substances. Besides the classical pathogen of this group of bacteria, *Mycobacterium tuberculosis*, so called atypical Mycobacteria play an increasing role as emerging health care acquired pathogens. Most prominent are strains of the *Mycobacterium avium-intracellulare* complex. This prompted experts in European standadisation, to define two levels of efficacy of disinfectants and antiseptics against Mycobacteria. EN 14348 differenciates tuberculocidal efficacy, which is tested with the test organism *Mycobacterium terrae* from mycobactericidal efficacy, tested with *M. terrae* and *M. avium*. While tuberculocidal disinfectants can only be regarded to be effective against the causative agent of tuberculosis, *M. tuberculosis*, mycobactericidal disinfectants can be regarded effective against all types of mycobacteria. Generally mycobactericidal efficacy is regarded to be more difficult to achieve than tuberculocidal efficacy. Data are presented that this is not the case for all active substances of disinfectants. Generally, alcohols are very effective against mycobacteria. Hence, in hand disinfection and disinfection of small surfaces mycobacteria do not pose a greater problem. For the disinfection of larger surfaces and medical devices, the choice is limited to non flammable active ingredients, which have an appropriate material compatibility. Data on the tuberculocidal and mycobactericidal efficacy of different active substances are presented.

O32 Prevention of hospital associated infections (HAI's) by using disposable protect sheaths for reusable ultra sound transducer devices

Bert Steen

Microtek Europa - Division of Ecolab, Zutphen, Netherlands

Medical Sonography (Ultrasonography) is an imaging technique whereby high-frequency acoustic energy is transmitted into the human body using a set of transducers attached to the skin. After its introduction shortly after the 2nd world war it has become one of the most widely used diagnostic tools in modern medicine, and accepted as being safe if used prudently.

Hygiene of Ultrasound probes however is a hot topic in the world of Medical Ultrasound. The issue concerns mainly the risk of contamination and the need for specific procedures to ensure a high degree of protection against infections. Problems surrounding the disinfection of the probes are that probes are expensive and fragile, and they can be intolerant of repeated treatment with peracetatic acid. Its useful life is reduced as a result.

Therefore a mandatory hygiene strategy is required to ensure adequate transducer hygiene. Recent studies provide recommendations to use specific sheaths designed for this use and bearing the CE marking, where condoms are not suited for this use. To avoid latex allergy non-latex covers are required. When a suitable disposable protective sheath is used, provided that the probe has not been in direct contact with biological fluids, low-level disinfection is required, and as such is an alternative to the usual high-level disinfection procedure.

O33 A Worldwide View on Infections in the Elderly

Christine J Nutty

Infection Advice Inc, Metropolis, Ilinois, USA

This workshop will give an overview of infectious diseases throughout the world. It will be broken into 3 sections:

I. The Aging Process – Its effect on immunity, tissue healing, and the basics of daily living. This section includes common infections of older adults.
II. Environmental Health Risks – The role of infectious diseases around the world with an in depth look at a sample of countries from each continent. It will include a description of the population, average life expectancy, median age and common infectious diseases of the region.
III. Precautions and Prevention Measures for the Health and Safety of the Elderly - This will include recommendations for prevention of transmission and predictions for the future.

Designing a ward O34

Ulrika Ransjö [1], Walter Popp [2], Akeau Unahalekaka [3]

[1] *Uppsala University Hospital, Uppsala Sweden*
[2] *University Hospital, Essen, Germany*
[3] *Chiang Mai University, Thailand*

The SIG presentation will be in the form of a workshop, with introductory lectures on the scientific basis of designing a ward with the perspective of prevention of infection transmitted from patient to patient and from the environment (Ransjö), and on practical aspects of ward design in high income countries (Popp) as well as low-moderate (Unahalekaka).

The audience will then be divided into four groups, each presented with an actual ward design from different parts of the world, which they will discuss. As a basis for discussion the participants will use the IFIC - SIG Design, construction and renovation

Design of a general ward

The results of the group discussions will be presented to the whole room, and will form the basis of the improved SIG recommendations.

Safe Injection Practices – Safe Needles Current Practices and Recommendations O35

Edward Krisiunas

Waste Not Want Not International, Burlington, Connecticut, USA

Needlestick injuries continue to plague healthcare workers around the world. Data on occupational exposures to healthcare workers is predominately reported from North America and Western Europe. However, disease burden of bloodborne pathogens in much higher in developing countries. Therefore the risk would be expected to be higher. While advances have been made in the development of safe needle devices, their use has been somewhat limited for a

number of reasons including cost and a lack of regulation requiring their use. A number of studies continue to point to the poor practices such as needle recapping as well as defanging. This latter approach is more widely used in mainland Europe as compared to North America and the United Kingdom and Ireland. There also continue to be practices of soaking and reusing of injectable devices in many developing countries. In addition to the use of hazardous equipment and procedures, factors such as increased prevalence of disease in developing countries, disease severity of patients, higher number of needlesticks, a culture in many countries of excessive use of injections and a lack of hepatitis vaccination coverage continue to pose challenges to reducing sharps injuries and improving patient safety. A number of strategies have been implemented that include changing behaviour of both patients and healthcare workers, the provision of better supplies i.e. John Snow Foundation (Making Medical Injections Safer (MMIS), and developing appropriate healthcare waste management systems. National policies have been implanted including in Cambodia, India, Zambia and South Africa which contributed to a decrease in occupational injuries.

This presentation will enumerate these and other risk as well as the strategies to initiate programs that can reduce needlestick injuries to healthcare workers

SATURDAY

O36 How to develop infection prevention and control in ambulatory care

Candace Friedman

University of Michigan, Michigan, USA

This session will outline ways in which infection prevention and control teams can set up a program for ambulatory care areas.

Ambulatory care settings include physician and dental offices/clinics, ambulatory surgery, and various diagnostic and treatment centers, such as dialysis. This session will focus on physician offices/clinics and ambulatory surgery centers.

The risks for patients in ambulatory care areas are less than in hospitals. However there are more complex patients being seen and many invasive procedures performed in those areas. This combination requires a thorough review for infection prevention practices.

Issues in physician offices/clinics include hand hygiene, environmental cleanliness, equipment/instrument processing, refrigeration of medications and specimens, and use of multidose medication vials. There are also risks to patients and staff due to communicable disease spread.

Issues in ambulatory surgery centers include patient preparation, antibiotic prophylaxis, staff attire and practices, instrument processing, and general environmental cleanliness.

Infection prevention and control programs in ambulatory care should evaluate the need for surveillance of infections, monitoring practices, and education of staff.

Getting to Zero and Other Possible Dreams and How to Know you Got There O37

Donald Goldmann

Institute for Healthcare Improvement, Cambridge, Massachusets, USA

For more than a half-century, healthcare epidemiologists and clinical investigators have laboured to develop a strong evidence base for preventing nosocomial infections. Research has been so voluminous that it has spawned several prestigious journals devoted exclusively to this subject matter. Nonetheless, progress towards implementing this evidence in practice has been slow until quite recently. Now infection control specialists have “caught the wave” of a worldwide movement to improve patient safety and reduce complications associated with hospitalization. Infection control departments have been empowered and achieved greater relevance because intensivists, surgeons and other clinical providers have called upon them to help reduce the burden of infection. Numerous

national and international improvement initiatives, such as the Institute for Healthcare Improvement's 5 Million Harms Campaign and related campaigns in other countries, regional improvement collaboratives, and government-sponsored programs have been launched. Accrediting agencies, such as the Joint Commission in the US, have made infection prevention a centrepiece of their standards, and a growing number of legislatures have mandated infection and antibiotic resistance reporting. Recently, Health and Human Services in the US has set national targets for infection reduction, akin to the targets for MRSA and *C. difficile* in England.

The revolution in the way we look at patient safety has brought us from a time when many infections were seen as inevitable consequences of hospitalization in sick, complex patients to being viewed as largely preventable. Some have claimed that it is possible to "get to zero," and many hospitals have claimed that they have gone for months or years with no ventilator-associated pneumonia or central line-associated bloodstream infections. Dramatic reductions in MRSA bloodstream infection in the US and England, as well as the Keystone Project in Michigan, certainly suggest that major improvement is possible. At the very least, "getting to zero" is now seen as an aspirational goal that focuses attention on each and every infection as a "defect" in care. Accordingly, "reliability" science has achieved greater prominence as a methodology to improve consistent adherence to key processes of care with a resulting decrease in the risk of infection. Whether or not a specific ward or hospital achieves "zero," reliability science and honest, transparent measurement can have a major impact on infection rates. Patients now should be able to enter hospital with confidence that everything possible is being done to provide safe, reliable care.

Clean care is safer care: First Global Patient Safety Challenge update

O38

Claire Kilpatrick

World Health Organisation, Geneva, Switzerland

Since 2005, WHO's First Global Patient Safety Challenge has been working to galvanise action on improved hand hygiene under the auspices of patient safety. In summary, it is clear that much has been achieved while working with our partners who take the leading role in pushing forward this agenda, at times often with little resources. However it is also clear that no-one has reached the crucial level of sustained hand hygiene in all health-care settings and that the risks of not doing so could continue to have a significant impact on the health and lives of many, taking into account our current situation with H1N1 among the many other infectious disease challenges that we currently face. SAVE LIVES: Clean Your Hands formally launched on 5 May 2009 as the new initiative for WHO's First Global Patient Safety Challenge: Clean Care is Safer Care, has seen over 5500 health-care facilities from 122 countries register, which demonstrates the on-going commitment for ensuring the prevention of health care-associated infections. Examples of the many activities and actions that have occurred over recent years will be described as well as providing an overview of the forthcoming challenge of applying a multi-modal strategy to ensure sustainability and the vision of making infection prevention and control a priority in health care everywhere.

Impact of hand hygiene improvement on infection rates in high endemic situations

O39

Gary French

St Thomas Hospital, London, UK

In England all hospitals are required to report their rates of MRSA bacteraemia centrally and these are published nationally. In 2003 our London Teaching Hospital had a high rate of MRSA bacteraemia compared with other

institutions. A Trustwide programme of infection control improvement was launched at the end of 2003, targeting MRSA and initially focussing on education, hand hygiene, environmental cleaning, intravascular line care and implementation of an MRSA care pathway. Auditing of performance and feedback supported a drive for culture change within the organisation, with a zero tolerance approach to poor performance and non-compliance.

This programme has resulted in a Trustwide improvement in the culture of hospital hygiene and compliance with good practice. MRSA bacteraemias have fallen by more than 70%, and this has been accompanied by similar falls in MRSA hospital acquisitions and other MRSA infections such as wound infections. In addition to improvements in clinical outcomes, these improvements have also resulted in significant savings in length of patient stays and hospital costs.

O40 More sinks? More rub? More hand hygiene? Not necessarily

Michael Borg

Mater Dei Hospital, Msida, Malta

Emphasis on improved hand hygiene compliance within health care facilities remains a paramount component of all infection control programmes and various models have been proposed to achieve the desired results. The study that is most often quoted in the literature is the one undertaken by Pittet *at al* in Geneva, Switzerland. Increased hand hygiene compliance was achieved through the introduction of accessible alcoholic hand rub together with a campaign that focused on visual reminders, especially posters. A concurrent and sustained reduction in health care associated infections, and specifically MRSA rates, was also obtained. Based to a certain degree on the results of Pittet's work, the provision of accessible alcohol hand rub has become the mainstay of the latest recommendations; including those issued by the World Health Organisation in its *Clean Care is Safer Care* campaign. Nevertheless questions have been raised whether it is possible to transpose the findings of such studies from one centre or country to another. These authors argue that those infection control models are unlikely to translate effectively into other countries, especially those with different socio-economic features or cultural backgrounds. Furthermore there is debatable evidence whether poster campaigns can result in a lasting, long-term improvement in hand hygiene compliance. This presentation will look at attitudes and studies in hand hygiene compliance in the Mediterranean region, a predominantly developing region characterised by high HCAI endemicity. It will attempt to highlight successful and less effective interventions in such settings.

Achieving a culture change for improved hand hygiene compliance O41

Stephan Harbarth

Geneva University Hospitals, Geneva, Switzerland

Adherence with hand hygiene (HH) remains low in most healthcare settings. Key parameters associated with noncompliance have been clearly identified and corrective actions proposed. Current guidelines recommend the use of alcohol-based handrubs as the new standard of care, thus requiring a system change. System change must be addressed in most hospitals and healthcare settings where handrubbing has not become a standard of care. Promotion strategies to improve HH should be multimodal. Methods to obtain senior management support, and to implement and evaluate the impact of the different components of multimodal strategies to promote HH must be developed. Targets for promotion must relate to the institution and require senior management support and commitment. Compliance improvement with HH is associated with reduced cross-transmission and antimicrobial resistance spread. HH promotion strategy can be used as a model for improvement of infection control practices and patient safety.

O42 Responding to the challenge of antimicrobial resistance and healthcare-associated infections

Dominique Monnet

European Centre for Disease Prevention and Control, Stockholm, Sweden

Abstract not available

O43 Surveillance of Antimicrobial Resistance: EARSS

Hajo Grundmann

National Institute for Public Health and the Environment, Bilthoven, The Netherlands

In order to inform stakeholders on the scope and dynamics of antimicrobial resistance (AMR) and develop appropriate response to its control in the European Region, the European Antimicrobial Resistance Surveillance System (EARSS) was initiated in 1999. Surveillance of AMR can address and improve the response to this public health threat at various levels ranging from improved understanding of the ecology through better patient care to public recognition. Thereby, surveillance networks can be identified by different attributes that describe their precise role and scope at all of these levels. Six conditions for successful delivery of the surveillance objectives were identified by the EARSS experience – legal support, economic viability, partnership, acceptability, validity and comparability, representativeness of results. In the last ten years, EARSS has provided country-specific estimates on the occurrence of antibiotic resistance among bacterial pathogens with clinical and epidemiological importance, causal inferences on the relationship with antibiotic consumption, and for the majority of participating nations EARSS currently provides robust estimates on the burden of disease directly attributable to antibiotic resistance as defined by increased mortality and extended length of hospital stay.

Surveillance of Antimicrobial Consumption O44

Herman Goossens

University Hospital Antwerp, Antwerp, Belgium

Several antibiotic resistance surveillance programmes are operational in Europe, yet a publicly available programme for the collection of antibiotic use data was lacking. At the "European Conference on Antibiotic Use in Europe" (Brussels, Belgium, November 15-17, 2001), during the Belgian EU Presidency, the European Surveillance of Antibiotic Consumption (ESAC) project, was launched. ESAC, granted by DG/SANCO of the European Commission and since September 2007 by ECDC, collects in a standardised manner information on antibiotic use in Europe, and makes this information available free of charge.

During the first phase of the ESAC project (November 2001 - January 2004), actions were taken to harmonise the collection of antimicrobial consumption data in all participating countries and valid data on outpatient antibiotic use were analysed.

During the second phase of the ESAC project (February 2004 – January 2007) the methodology was consolidated, quality indicators of antibiotic prescribing were developed, and the more detailed antimicrobial use data, including antifungals and antivirals, was collected.

During the third phase of the ESAC project (September 2007 – August 2010) an enhanced protocol to collect data on antibiotic use linked to patient's age and gender, the indication, the prescriber, and nursing homes, as well as point prevalence and cross sectional studies on hospital care use, will be further deployed. Additionally, information on the regimen (dosage and length of treatment) will be collected to perform sensitivity analysis of the ESAC methodology performance, considering various units of measurement.

In conclusion, for the first time, a credible alternative to industry sources has been established for the collection of internationally comparable data on antibiotic consumption in Europe. However, the antibiotic use data collected in ESAC must be still interpreted with caution as more efforts are needed to consolidate and enhance the quality of the surveillance of antibiotic consumption. For instance, the seemingly simple matter of measuring the use of antimicrobials in hospitals is fraught with problems as there are so many different methods used and trying to compare these can give misleading results.

O45 ECDC surveillance of healthcare-associated infections

Carl Suetens

European Centre for Disease Prevention and Control, Stockholm, Sweden

In July 2008, the coordination of the network for the surveillance of healthcare-associated infections (HAI) in Europe IPSE (Improving Patient Safety in Europe) network was transferred to ECDC. The surveillance of surgical site infection surveillance (SSI) and the surveillance of nosocomial infections in intensive care units (ICU) continued without changes to the surveillance protocols as in the HELICS network, collecting data from the national surveillance networks for HAI based on common protocols agreed on in 2002-2003. ECDC also continues providing support to Member States to set up such hospital surveillance networks in their countries by making available free software for hospitals and network coordination centres, and providing on-site training courses on HAI surveillance. The main objectives of the HAI surveillance are to analyse trends, inter-country differences, to work towards comparable surveillance methods, to draw up European reference tables for inter-hospital comparisons of risk-adjusted HAI rates and to contribute to the extension of HAI surveillance in the EU.

In 2007, data on surgical site infections were received from 12 countries and included 259694 surgical interventions from 1175 hospitals. A decreasing trend was observed for SSI after hip prosthesis operations (HPRO) in 6 countries with an overall decrease of the cumulative incidence from 2.2% in 2004, 1.7% in 2005, 1.4% in 2006 and 1.2% in 2007 ($p<0.001$). Isolated micro-organisms in ICU-acquired pneumonia and bloodstream infections showed remarkable differences between countries for e.g. *Acinetobacter* spp., with 71.6% carbapenem resistance and 3.8% colistin resistance in countries collecting optional resistance data.

While the participation of countries to SSI and ICU surveillance is still partial, ECDC is preparing an EU-wide point prevalence survey of healthcare-associated infections and antimicrobial use in acute care hospitals in 2010-2011, in order to measure the total burden of HAI and antimicrobial use in EU hospitals. Furthermore, building on previous work of IPSE and in accordance with the EU Council Recommendation 2009/C 151/01 on Patient Safety including the prevention and control of HAI, ECDC is preparing surveillance of structure and process indicators of infection control and outsourced surveillance of HAI in nursing homes (HALT project).

Staff and patient empowerment: a realistic goal or a utopic dream? O46

Judith Richards

Norfolk and Norwich University Hospital, Norwich, United Kingdom

Effective programmes of infeciton control are resource intensive, and require high levels of input.

As Infection Control practitioners become an even more scare resource, and the demands on their time increase, there is a need to promote awareness and a sense of ownership on the part on non-specialist health care workers and of patients themselves.

This presentation will explore two strategies that have been proposed to help meet the fonclicting demands of suveillance, communication, training and education, and day-to-day practical ward based work.

The effectiveness of an Infection Control Liaison Practitioner programme will be reviewed, and some of the constraints and pitfalls explored in detail. Transfer of responsibilities to th epatient through "patient empowerment" programmes has also been advocated. The potential difficulties in promoting this approach will be presented.

O47 Infection Control and Communication including the Media

Wendy Beckingham
The Canberra Hospital, Canberra, Australia

Communication is the process by which information is transmitted and understood between two or more people. Communication takes many forms. These include but are not limited to email, newspaper, television and radio. Infection Control is called on to use all forms of communication to get the message required to both internal and external stakeholders.
To ensure the message you are wishing to convey is heard then you must determine the best communication channel for the situation and be flexible enough to use different methods as the occasion requires. This could mean the use of persons other than yourself who has experience to convey that message on your behalf.

Understand the importance of being prepared, the pitfalls, who your audience as this will allow the message you are trying to deliver to be correct and well received. All forms of communication will be discussed as well as outlining appropriate use of each form of communication and the effective ways in which Infection Control can get its message across to all stakeholders.

O48 Communication during an outbreak

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The role of the infection control professional includes the management of outbreaks. This may include controlling the spread of novel viruses such as swine flu (H1N1, 2009), corona virus causing SARS and other common viruses such as norovirus causing viral gastroenteritis. Communication is well recognised as one of the most important elements of any project. However, it has an even more critical role in outbreak management with the potential to significantly affect the overall outcome. The aim of communication during outbreak management is to engage all stakeholders.

During an outbreak methods of communication may involve verbal, pictorial and written mechanisms. Such mechanisms should include informing stakeholders of the agreed case definition, disseminating standardised tools including algorithms and case reporting templates, outbreak management protocols and prospective results of surveillance data. Written notification to inform stakeholders can be disseminated internally via email, memoranda or signage and externally communicated as necessary via media releases. Finally publishing the management and outcome of the outbreak in a peer review journal to share the lessons learnt from the outbreak.

It is vital that during the outbreak all stakeholders are fully engaged to ensure success in containment and control. These stakeholders include hospital staff: cleaners, allied health, laboratory, nursing and medical staff through to executive management; patients and their visitors.

Infection control staff need to have maximum visibility from the beginning of an outbreak to enable access to all people in the workplace and gain a complete understanding of the issues. Executive management support is important to facilitate logistics and allocate resources, however, clinical leadership is the key to successfully managing an outbreak.

Completing a debrief process with representation from the key stakeholder groups at the resolution of the outbreak can be revealing and enable the development of improvements for managing future adverse events. These may include improved patient and staff safety, better communication strategies and reducing health care costs.

O49 Using new media to promote infection prevention

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It is well known that compliance with infection prevention regulations is a main problem in healthcare facilities. Very often only papers and presentations are used in education with limited results. New media (videos, posters, intraweb based learning programs …) promise to give additional support in educating hospital staff. This presentation will give some background for this and, above all, a lot of examples.

O50 Reduction of nosocomial infections in the pediatric intensive care units in Lithuania, 2006-2007

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Objective

The aim of the study was to identify the most important risk factors of nosocomial infections, to measure the incidence rates' and risk changes after the multi-modal intervention, and to make an economic evaluation of the intervention.

Material and methods

This was a prospective surveillance study. Data were collected from January 1st 2006 until December 31 2007 in three pediatric intensive care units. All patients aged between 1 month and 18 years old that stayed in units for > 48 hours were included in the study. The patients were divided into pre-intervention (2006) and post intervention (2007) groups. The multi-modal intervention (infection control program) included education of the staff and implementation of evidence-based infection control measures, including the oral care program for intubated patients.

Results

The total number of 592 children were included in the study. Major risk factors for nosocomial infections were identified: mechanical ventilation, central line, intracranial pressure device and tracheostomy. Overall the incidence rate (15.6% *v.s.* 7.5%, p=0.002), incidence density (19.1 *v.s* 10.4 per 1000 patient-days, p=0.015) and the incidence of pneumonia (5.6% *vs.*1.9%, p=0.016) has decreased in the post-intervention as compared with the pre-intervention group. The relative risk reduction, absolute risk reduction and number needed to treat (NNT) were statistically significant for ventilator associated pneumonia (66.5%, 3.7%, 27, p=0.016). The cost-to-effect ratio of the multi-modal intervention was 1 : 4. On average the inputs comprised of 280,05 LTL (national currency) in order to prevent 1 case of nosocomial infection, and we needed to invest 336,06 LTL to protect 1 patient from nosocomial infection, while the mean evaluated 1 bed-day charges were 594,58 (95 % CI 573,82 to 615,35) LTL.

Conclusions

The most important risk factors for nosocomial infections were mechanical ventilation, central line, intracranial pressure device and tracheostomy. After the multi-modal intervention there was a statistically significant decrease of the incidence rates of nosocomial infections and the risk reduction for ventilator associated pneumonia. From the point of economic evaluation the intervention was undoubtedly effective.

Continuous reduction of MRSA bacteremia in Latvian hospitals O51

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Introduction

First laboratory confirmed case of MRSA infection in Latvia was reported in the end of 2002. Infection spread rapidly and in 2004 became endemic at all largest hospitals. In 2004, unified resistance testing protocol for invasive *S. aureus* was implemented, in 2006 MRSA laboratory based country wide surveillance initiated, and in 2007 infection control and screening procedures were determined by national guidelines.

Methods

All invasive *S. aureus* isolates from blood samples where subjected to identical resistance detection

protocol based on EARSS recommendation in 7 (2004-2005) and later in additional 6 (2006-2008) microbiology laboratories covering most of the Latvian hospitals. MRSA was confirmed by amplification of the mecA gene. In all MRSA isolates SCCmec type was established and they were subjected to spa typing and MLST.

Results

Out of 542 invasive *S. aureus* 92 (16.9%) isolates where found to be MRSA. We observed the significant reduction ($r = -0.97$, $p<0.05$) in the proportion of MRSA bacteremias (25.3% in 2004, 19.8% in 2005, 18.1% in 2006 and 8.3% in 2007, and 10% in 2008) and also in absolute numbers of laboratory confirmed invasive MRSA cases. More detailed analysis revealed that half of 2008. MRSA cases (9/18) were isolated from one hospital with burn unit. Therefore overall reduction in the country was even more significant. All but one invasive MRSA isolates from 2003 to 2008 belonged to ST368-MRSA-III with spa type t425. The only exception was CA-MRSA which is widespread in Europe: ST30-MRSA-IV (spa type t021).

Conclusions

The proportion of MRSA bacteremia was significantly reduced in largest Latvian hospitals over the 2004-2007 study period. We think that increased awareness, surveillance and infection control guidelines combined with outbreak investigation have lead to this improvement. MRSA strains showed little clonal variation and only one invasive CA MRSA isolate was detected.

O52 Control of Healthcare-associated Infections in Lithuania - lessons learned from surveillance

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Despite progress in public health and hospital care, infections continue to develop in hospitalized patients. Control of health care associated infections (HCAI) is considered as one of the very important healhcare quality standars apparently contributing to patient safety. Number of surveys and projects have showed the positive impact of surveillance reducing number of infections. Surveillance of HCAI in Lithuania was one of the sensitive issues. The old comprehensive HCAI registration system with mandatory reporting of all infections to public health institutions have been proved to be completely ineffective (clear underreporting, no feedback etc.). For many years it contributed to hiding the problem and interfere with development of infection control. The new surveillance scheme was elaborated using experience gained participating in European network (HELICS, IPSE projects). It included 3 protocols:

- Prevalence studies organised every second year
- Continues surveillance of surgical site infections
- Continues surveillance of HCAI in ICU.

Confidentiality, voluntary participation in specific surveillance elements (surgical site infections and ICU acquired infections), clear and direct reporting as well as feedback schemes were the most important drives that secured the success. Most of the invited hospitals have took part in prevalence studies and HCAI rates were comparable with data from other countries. HACI were reported in hospitals where they were never officialiy registered before. Continues HCAI surveillance in surgical departments and ICU stimulated collaboration between infection control and clinical staff. The initial testing of this scheme has proved the increased interest and improvement of all infection control activities in pilot hospitals.

O53 Point prevalence studies on nosocomial infections and antibiotic use in two Baltic States

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Introduction

Antibiotic resistance and nosocomial infections have been recognised as a growing threat for hospitalized patients. Point prevalence surveys have been considered as relatively easy and cheap method to

obtain information on healthcare acquired infections and benchmark the antibiotic use.

Annual national point prevalence studies were performed in Latvia and Lithuania by using different methodological approaches. Some of the surveys have been published in international peer reviewed journals, but some of the information is available only in local reports.

Methods

Comparable data from National prevalence studies in Latvia (LV) and Lithuania(LT) were analysed.

Results

The total prevalence rate of infection over the years varied from 22.3 to 27.2% in LT and 16.4 to 22% in LV. The prevalence of nosocomial infections in LT varied from 3.4 to 4.6 %, in LV 3.1 to 4% The prevalence of antibiotic use in hospitalized patients was 24.8%- 28.6% in LV, in LT 27.8 to 31.1%. The most commonly used antibiotic groups were first generation cephalosporins (LV 35.6-38.9%; LT 12.3-20.6), broad-spectrum penicillins (LV 17.5-23.0%; LT 14.3-19.2), fluoroquinolones (LV 8.4-14.5%; LT 3.4-4.5) and aminoglycosides (LV 7.7-12.6%; LT 15.5-21.2%). Increase in fluorquinolone and decrease of aminoglycoside use was observed in both countries.

Conclusions

Prevalence studies provided an opportunity to outline variations and problem areas on the local hospital and country level and can serve as good quality control excercise . Despite different healthcare systems and different surveillance methodologies studies in both countries revealed rather similar results indicating that prevalence of nosocomial infections and antibiotic use is relatively low.

Development of educational materials on infection control for health care workers

O54

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Implementation of infection control (IC) in health care facilities (HCFs) of Russia's North-West Region is often impeded by IC knowledge gaps among HCWs. This results from the fact that prevention work in most HCFs has traditionally been seen as compliance with regulatory documents rather than a comprehensive system. Most of these documents have long become obsolete and fail to reflect the latest advances in infection control. Infection prevention is often absent from the curricula of many medical education facilities. Another training-related problem is the high workload and time shortages experienced by HCW.

This situation calls for the development of IC training programmes which could introduce as many HCWs as possible to modern concepts of nosocomial infection control.

Within the framework of the Russian – Swedish Project "Infection Control Network in North-West Russia", the Epidemiology Department of the Saint Petersburg Mechnikov Academy and their Swedish colleagues have developed IC training programmes for HCWs in 8 health services: intensive care, surgery, traumatology, burn treatment, obstetrics, gynaecology, dentistry and outpatient care. The programmes use up-to-date knowledge of IC and are supported by evidence-based data.

A set of CDs with educational materials covering issues of IC in the medical services mentioned above was developed to deliver the distance learning component. Each CD contains reading materials and interactive tasks, including tests and case studies. In addition, the distance learning materials were duplicated on the web-based Moodle platform.

The face-to-face education component included topic discussions, case studies and roleplays. Face-to-face workshops were held in Saint Petersburg, Kaliningrad, Novgorod and Vologda. Training has been provided to a total of 250 HCWs. Training efficiency was highly appraised by workshop participants.

At present, the Russian – Swedish project is developing multimedia materials on IC.

O55 The situation of MRSA control in Lithuanian general hospitals

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Background

The prevalence of antimicrobial–resistant organisms is most common reason for complicated healthcare acquired infections (HCAI). Little is known about the prevalence of MRSA in Lithuanian hospitals, the control of multiresistant microorganism is not regulated or guided by any national guidelines or other documents. The main aim of our study was to describe the situation of MRSA control in general hospitals.

Methods

40 general hospitals were randomly selected and invited to take part in this descriptive survey. Special questionnaire was prepared for this study, include questions about methods of MRSA detection, infections control precautions, screening methods. Data from 30 hospitals were received (response rate 75.0%).

Results

Hospitals reported 721 MRSA strains isolated in 2007 out of almost 8000 *S. aureus*, giving the MRSA prevalence rate of 9.1%. Most hospitals use disk diffusion method for MRSA detection. The MRSA genotyping is not performed in Lithuania. Half of the hospitals have local MRSA control guidelines. The data about infections control precautions were received from 22 hospitals, analysis showed that MRSA patients are always isolated in less than half hospitals, in that case most often hand antiseptic (80.0 %), gloves (72.0%), gowns (68.0%) are offered on entrance. Individual medical and nursing equipment for MRSA patients is provided in 45.8% hospitals and separate staff in 12.5 %. For MRSA prevention screening of patients is performed only in 7 (25.0%), screening of staff in 13 (46.4%) hospitals.

Conclusions

The control of MRSA is not adequate in most of the hospital emphasising the need of national guidelines and education.

Identifying perceptions & beliefs: the first challenge in every hand hygiene compliance initiative O56

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Introduction

Hand hygiene (HH) remains one of the most cost effective interventions in healthcare yet compliance continues to elude many hospitals. This suggests the need to understand perceptions and analyze reasons for non-conformity.

Methods

A structured questionnaire, adapted from the World Health Organisation HH questionnaire, was used to identify opinions and beliefs related to HH amongst healthcare workers (HCW) in Mater Dei Hospital – an 800 bed tertiary care facility in Malta. The questionnaire used single choice questions on a Likert scale together with open-ended suggestions for improvements. The questionnaire was tested for face and content validity plus reliability and was distributed to all HCWs in four wards within the hospital. Data were transformed into numerical form and analysed by Chi Square or One-Way Anova tests. Open-ended questions were processed manually and grouped into themes.

Results

150 questionnaires (response rate 85%) were returned; 51% of respondents were nurses and 23% doctors. Doctors placed reduced emphasis on HH importance, were likely to have attended less educational HH events after their graduation and were more unwilling to be

corrected after a missed HH opportunity. All HCW's admitted to lower HH frequency before as opposed to after patient or environmental contact. Suggestions for improvement focused mainly on education and facilities with audit and feedback amongst the least mentioned.

Conclusions

Efforts to improve HH face numerous socio-cultural challenges and primarily self-protection concepts not only between countries but also amongst different professions. Local HH campaigns must take into account such nuances if there are to succeed.

O57 MRSA and tobacco smoking: the crossroad of epidemics

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Aim

Smoking tobacco is known to suppress the immune system and disturbe normal nasal flora. Hypothetically tobacco smoking could be associated with methicillin-resistant *Staphylococcus aureus* (MRSA) formation in the upper respiratory tract. The aim of the present investigation was to detect the amount of MRSA carriers among tobacco smokers.

Methods

Nasopharyngeal swabs MRSA and nasal tissue samples were taken from 2568 smokers and 3000 non-smokers enrolled for long-term study from 1998 through 2008. Person's smoking behaviour, age, gender, morbidity and use of antibiotics was recorded.

Results

MRSA nasal carriage was found in 1% of non-smokers (30/3000) and in 4% of tobacco smokers (103/2568) in 1998, in 1,5% of non- smokers and in 6% of smokers in 2000, 1,7% and 8,4% in 2001, 1,7% and 9,2% in 2002, 1,5% and 9% in 2003, and 1,2% and 10% patients in 2004. Male smokers ages 50-65 years ($p<0.001$), antibiotic use ($p< 0.02$), rate of hospitalization ($p=0.005$), and specific local IgE level ($p< 0.001$) were significantly associated with MRSA colonization.

Conclusion

The nasal carriage of MRSA among tobacco smokers is high, undetectable, and growing. It is possible that tobacco smoking maybe the cause of nasal carriage of MRSA. From other risk factors for MRSA nasal carriage including antibiotics, rate of hospitalization, contact with health-care workers, previous MRSA infection, older age, diabetes and obesity, smoking is most significant because of its effect on immune system and contagious. There is a crossroad of smoking and MRSA epidemics and this trend is worrisome.

Decreasing the rate of central line associated bloodstream infection in a tertiary hospital O58

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Background

Central line Associated bloodstream Infection (CLABSI) are associated with high rates of mortality. Adherence to the best practice prevention guidelines for central line insertion can considerably reduce the rates of CLABSI.

Problem

In February 2007, CLABSI rates increased to 4.76/1000DU after expansion in hemato-oncology Department, in Dar Al Fouad Hospital, a 120 bed-tertiary hospital in Cairo, Egypt.

We aimed to reduce CLABSI rates to less than 1/1000DU within one year starting from July 2007.

Methods

Base-line assessment: an observation study showed that compliance with CLABSI prevention bundle was less than 50%.

Analysis for the reasons of non-compliance with the bundle: Inadequate knowledge of the components of the bundle (70%), Inadequate training on aseptic technique (60%), Inappropriate drapes (40%).

Intervention

1- Establishing a central-line insertion (CLI) team, 2- Education and training about the CLABSI prevention IHI bundle, 3- Preparation of CLI policy and checklist 4- Preparation of CLI kit, 5- Assigning an infection preventionist to observe compliance with bundle and fill the checklist, 6- Patient education about line maintenance.

Results

Significant reduction in CLABSI rate started immediately after intervention. Rates ranged from 2.2- 3.4/1000DU from July-December 2008, and from zero-2.35/1000DU from January-June 2009. No CLABSI occurred during the months of January, February, April and June 2008.

Conclusion

The rates of CLABSI could be reduced with the above mentioned interventions. Continuous monitoring of CLABSI rates and compliance with prevntion policy is an essential component of the hospital infection prevention and control program.

O59 Surgical site infections in cardiosurgery

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Introduction

Surgical site infections (SSI) are associated with cardiovascular operations. Potential fatal complications are a real risk for patients after cardiosurgery. Surveillance of SSI is one of the important elements for decreasing SSI.

Aim of the study was to evaluate variations of SSI rate after coronary artery bypass graft surgery (CABG) and risk factors associated to them.

Methods

A prospective 3 month studies were performed in Kaunas Medical University Hospital Cardiosurgery Department in 2004 (50 beds) and 2008 (40 beds). Modified HELICS protocol was used for data collection. SSI were identified using CDC definitions.

Results

135 (2004) and 217 (2008) patients underwent CABG surgery. The SSI rate decreased from 13,0% to 8,29% (2004 and 2008, respectively). Proportion of superficial and organ/space infection did not change and remains 2:1. Microbiological examination of SSI increased (88,5%/2004 - 94.4%/2008), 64.8% cultures were positive in 2008 (30,4%/2004). Methicillin resistant coagulase - negative staphylococcus (CNS) was the most common isolated pathogen (41.7%) in 2008, methicillin sensitive *S. aureus* and CNS were dominant SSI causative agents in 2004. Cefazolin was prescribed for all patients for preoperative antibiotic prophylaxis in 2008 (93,1%/2004). Preoperative lenght of stay decreased 3.04 days (8.84/2004 and 5.81/2008). Average postoperative lenght of stay shortened 1 day in 2008, but increased stay of patients with SSI (26,7 days/2004 and 38.6/2008).

Conclusion

SSI surveillance allows evaluate effectiveness of infection control and previse preventive measures to reduce SSI rate after cardiosurgery in future.

O60 Surgical site infections: Follow up is important for registration and infection control precautions.

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Background

Surgical site infections may occur a month after an operation. Most patients are dismissed from hospital within a week after operation. In this study the proportion of surgical site infections during hospital stay and after dismissing was established.

Material and Methods

Incidence registration was done by infection control persons by daily visit for a month in the heart surgery unit (77 patients) and the urology unit (144 patients). All patients who got a nosocomial infection were recorded. One month after the operation a short questionnaire, asking for treated infection after dismissing the hospital, was send to the patient.

Results

No infections were observed in ICU. In the heart surgery unit 12% of the patients had UVI, VAP, blood stream infection and gastroenteritis. After dismissing, 10% of the patients had SSI, mostly superficial wound infections in legs where vessel grafts were taken. In the urology unit only catheter related infections were observed. After dismissing 23% of the patients reported infections. 7% of the patients had superficial SSI and 11% had UVI.

Conclusion

In these two incidence registrations all SSI occurred after dismissing the hospital. In urological patients all UVIs were observed in the patients after dismissing the hospital. This underlines the importance of follow up of the patients to get a valid registration and a basis for relevant precautions. In the case of heart surgery these observations changes the surgery procedures to reduce superficial wound infections in the legs.

O61 Adherence to alcohol-based handrubbing and healtcare-associated infections

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Introduction

Hand hygiene is considered one of the most important measures for preventing the spread of pathogens in hospitals and thereby preventing healthcare-associated infections. Aim: To investigate if adherence to correctly performed alcohol-based handrubbing influence on the prevalence of healthcare-associated infections.

Methods

A one day prevalence survey among all admitted patients in 2006 and 2007, and a cohort study of alcohol-based handrubbings among hospital staff in 2006 and 2007 in ten bed-wards at Aarhus University Hospital, Skejby, Denmark.

Results

We observed 22,906 opportunities for alcohol-based handrubbings among 496 staff members. 214 staff members were observed both years. There was a significant increase in adherence to correct performance of handrubbing between 2006 and 2007 before a procedure (adjusted odds ratio [OR] 1.63 [95% confidence interval [CI], 1.47 to 1.81], $p < .0001$), and after (adjusted OR 1.52 [95% CI, 1.37 to 1.68], $p < .0001$). Among the 416 patients, there were 66 cases of healthcare-associated infections. The prevalence of healthcare associated infections decreased from 18.4% in 2006 to 13.2% with a difference in the prevalence of healthcare-associated infections between 2006 and 2007 of 5.2%, [95% CI - 1.8 to 12.1]. We found no significant reduction in healthcare-associated infections during the study period, (adjusted OR 0.65, [95% CI, 0.37 - 1.12]). Similar results were found when stratifying by ward.

Conclusion

Even though we found a significant increase in adherence to alcohol-based handrubbing we could not identify a significant decrease in the prevalence of healthcare-associated infections during the study period.

Risk areas for spread of infections can be reduced by focused cleaning procedures O62

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Background

Several studies have shown that there is no relation between visual cleaning and risk of nosocomial infections. In this preliminary study several methods to establish the degree of cleaning before and after simple interventions were evaluated.

Material and methods

The intensive care unit was divided in two groups. 120 environmental samples were taken in each group. In group 1, 43 points and in group 2, 57 points were regarded as "risk points" on the basis of finding S. aureus, enterococci, Gram negative rods or high ATP. In group 1, interventions were done for the cleaning staff. In group 2, interventions were done for the nursing staff.

Results

It was difficult to practice the cleaning staff being "on call". The remaining procedures seem not to be a problem. In group 1 environmental risk areas were reduced from 43 to 32 "risk points" (26%). In group 2 environmental risk areas were reduced from 57 to 27 "risk points" (53%).

Discussion

The involvement of the nursing staff seems to be more effective than interventions for the cleaning staff. This could, however, be due to the focus on the cleaning during the study. It seems possible to improve the cleaning in hospitals and further studies are needed.

O63 Targeted Enhanced Protocol to Control MRSA Infection in Cardiothorathic Surgery

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Surgical site infections (SSIs) remain a significant clinical problem, despite improvement in prevention, as they are associated with substantial mortality and morbidity and impose severe demands on healthcare resources. Numerous patient-related and procedure-related factors influence the risk of SSI, and hence prevention requires a "bundle" approach, with systematic attention to multiple risk factors, in order to reduce the risk of bacterial contamination and improve the patient's defense. Due to increasing MRSA infections in cardiothoracic surgery, and the occurrence of two outbreaks in coronary artery bypass graft (CABG) operations, in 2006 (May-June-July) and in 2007 (from January to April), a targeted infection control protocol was formulated. Prospective follow up of antibioprophylaxis policy and patient preparation was done for 18 months. Significant reduction of MRSA infections was observed and documented by the surveillance of healthcare associated infections. Clearing up of the outbreak was achieved in addition to the return back to normal accepted range of SSI in cardiothoracic surgery.

O64 Survey of hepatitis B and C among newly-employed health care workers at the metropolitan hospitals in Taiwan

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Background

Hospital should have its safety policy for patients and health care workers including protection from HIV infection with universal precautions. Hepatitis B and C are risk factors of Liver cancer, hospital and health care workers (HCWs) need to know the data of both markers before HCWs' employment in order to protect patients and themselves. Screening of these markers can also help to search as an indicator of needle injury with risk of HIV exposure since universal HIV testing are not restricted not available at present.

Objective

Aims of study is understanding the newly-employed HCWs' Hepatitis B and C conditions and make safety policies to protect Patients and HCWs with strategy of universal precautions.

Methods

The Survey was carried on form 2006 to 2007, It took blood samples of studying HCWs' HBsAg, **A**nti-HBs and AntiHCV-IgG, and included 6 the metropolitan hospitals.

Results

Total of new HCWs were 237. However, the effective cases were 236. 17 (7.2%) of New HCWs were positive on HBsAg. 191(82%) of them were positive on **A**nti-HBs. There were 82 (35.2%) of them with positive AntiHCV-IgG and only 27(11.6%) of them have received complete schedules of hepatitis B vaccination. Among those 27 HCWs with Hepatitis B Vaccine, only 2 have developed **A**nti-HBs(+), and none have developed HBsAg(+). Sixteen (18.6%) out of the 82 AntiHCV-IgG(+) HCWs have concomitant HBsAg (+). This also means 16 (6.87%) out of 233 HCWs tested have both AntiHCV-IgG(+) and HBsAg (+).

Conclusions

There were highly Anti-HCV postive rate among newly employed HCWs. The response rate to Hepatitis B Vaccine was also low with only 2 HCWs developed **A**nti-HBs(+). However, as the case number of study group is limited and lack of follow up study, we need further observation and analysis to explore their previous occupational history to develop a proper strategy of protecting HCWs from needle injury.

O65 A Unified Approach for Outbreak Management at Multiple Facilities

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Introduction/Aim

Vancouver Coastal Health (VCH) has 14 acute care hospitals, 14 directly operated long term care facilities, and 41 contracted long term care facilities. Debriefing meetings following the conclusion of several gastrointestinal and respiratory outbreaks identified differences in outbreak management at the facilities, all of which had developed useful educational material, checklists and guidelines. Two student nurses were contracted as part of a course project to develop a standardized toolkit for use by all VCH facilities to manage outbreaks.

Methods

An assessment and inventory of currently available resources (educational materials, checklists, signage, FAQ sheets and directives) was performed. Together with an experienced ICP who supervised the project, the students selected the most relevant, concise, and applicable material. Two standardized tool kits for outbreak management of gastrointestinal and influenza outbreaks were then developed with each toolkit providing instructions for Acute Care and Long Term Care facilities. These were first presented to the regional infection control group for review after which nursing and management input was obtained.

Results

User-friendly regional tool kits for the management of outbreaks of gastroenteritis and/ or influenza in both acute care and long term care facilities were developed. The tool kits will be distributed to managers and Infection Control staff throughout the region to standardize the approach to outbreak management.

Conclusions

Involvement of front-line healthcare workers and management in addition to Infection Control is crucial in development of consistent outbreak management plans for multiple facilities with differing levels of care.

O66 Rapid MRSA Screening Can Lead to a Reduction in the Rate of MRSA Acquisition

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Identification of patients colonised with methicillin resistant *Staphylococcus aureus* (MRSA) and introduction of subsequent control measures is pivotal to the control of cross infection in hospitals. A prospective, two period cross-over design was used to establish if early identification of patients using rapid molecular methods alone reduces transmission. Seven surgical wards at a large hospital were allocated to two groups, and for the first eight months four wards used rapid molecular MRSA screening and three wards used a standard culture method. The groups were reversed for the second eight months. Regardless of the method of detection all patients were screened for nasal carriage on admission and then every four days. MRSA control measures included prescribing of mupirocin nasal ointment and triclosan body wash for all positive patients and placement of patients in an isolation room if available. All measures remained constant throughout the study. The mean time for reporting of positive results for the rapid test was 0.9 days versus 3.3 days for the culture test. After adjusting for other variables, rapid screening was shown to statistically reduce MRSA

acquisition with patients being 1.49 times (p=0.007) more likely to acquire MRSA in wards where they were screened using the culture method. Screening of surgical patients using rapid testing resulted in a statistically significant reduction in MRSA acquisition. The result demonstrated that rapid molecular methods can be delivered in a timely manner within a routine setting and that reductions in MRSA transmission can be achieved in a background of high bed occupancy and low availability of isolation rooms.

O67 Cost-effectiveness of rapid molecular MRSA-screening

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Methicillin-resistant *Staphylococcus aureus* (MRSA) is a major cause of surgical site infections, hospital-acquired pneumonia and various other infections. MRSA constitutes an increasing problem in hospitals in Germany and other countries and is associated with extended length of hospitalization, rising hospital costs and increased mortality.

The most efficient way to prevent the spread of MRSA is controversial. Active surveillance by screening measures is part of various guidelines in order to identify and decrease the reservoir of MRSA. Screening models differ in dimension and employed laboratory methods. Selective screenings with regard to certain risk factors for MRSA and to crucial areas within the hospital such as ICUs with a general screening on admission to the corresponding institution have been described as well as hospital-wide screenings and have shown effectiveness in reducing MRSA. The two most commonly used methods include the use of culture-based media that take at least 24h of incubation and new molecular methods that are more expensive but can show results in less than two hours. This time-advantage allows a rapid installation of isolation measures and a decolonization regimen or antibiotic therapy and it thereby provides a chance to impede the spread of MRSA by unknown carriers.

O68 Indications for wound antisepsis and principles of choosing antiseptics

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Wound antisepsis lost its importance for more than a century due to the high toxicity of Lister's carbol wound spray and the toxic side effects of following antiseptics such as organic mercury compounds, dyes, sulfonamides, nitrofuranes, quinolinols, and the initial euphoria after the introduction of the antibiotic penicillin. Reasons for the renaissance of wound antisepsis are the increasing of antibiotic resistance, the high sensitization rate following local application of antibiotics, lack of microbicidal efficacy of antibiotics, and Introduction of well tolerable wound antiseptics.

O69 Octenidine dihydrochloride: chracteristcs and use for wound antisepsis

Ojan Assadian

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The antiseptic compound Octenidine-dihydrochloride (OCT) now is been used on skin, mucosa and wounds since more than 20 years in middle European countries. Octenidine-dihydrochlo¬ride (CAS-Number 70775-75-6) (N,N'-(1,10 decanediyldi-1[4H]-pyridinyl-4-ylidene) bis-(1-octanamine) dihydrochloride) is a cationic, surface active substance. OCT expressly differs from quaternary ammonium compounds such as benzalkonium chloride and guanidines such as chlorhexidine as their amide- and ester structures are not part of the OCT molecule. Therefore, 4-chloro-aniline, a toxicologically critical part of chlorhexidine, cannot be liberated from the OCT molecule. OCT is stable in a pH-range from 1.6-12.2. In aqueous solution, it is stabile in steam up to 130°C and can be stored at room temperature.

The two non-interacting cation active centres in the OCT molecule are separated by a long aliphatic hydrocarbon chain. It therefore binds readily onto negatively charged surfaces, as microbial cell envelopes

and eukaryotic cell membranes. Preliminary results imply a particularly strong adherence to lipid bacterial cell membrane components (e.g. cardiolipin) which might explain the high antimicrobial efficacy without adversely affecting human epithelial or wound tissue.

OCT possesses a broad antimicrobial spectrum, including action against Gram-positive and Gram-negative bacteria, chlamydiae, mycoplasma, and fungi. The in-vitro antimicrobial efficacy is 3 to 10 times higher than that of chlorhexidine. MICs against Gram-positive and Gram-negative organisms range between 1 µg/ml and 4,9 µg/ml and 1.5 and 3.0 µg/ml for different yeast strains (*C. albicans, C. tropicalis, C. pseudotropicalis*). MBCs of OCT are about to be published by our group and range from 1 µg/ml to 32 µg/ml. Results from suspension test with OCT after 5 min, 15 min, 60 min and 1000 min contact time reveal a fast microbicidal effect against different pathogens including *S. epidermidis, S. aureus, P. mirabilis, S. pyogenes, K. pneumoniae, E. coli, P. aeruginosa* and *C. albicans* in concentrations five to twenty fold lower compared to chlorhexidine. Presence of albumin, blood (tested up to 10 %) and mucin does not reduce the antimicrobial efficacy of OCT, but high levels of free cardiolipin can abolish the microbiocidal activity of OCT completely and high levels of chondroitin sulphate diminish microbicidal activity as well.

O70 Polihexanideand its role in antisepsis of chronic wounds?

Gerit Mulder

University of California, San Diego, USA

Numerous topical agents are available for the treatment of chronic and problematic wounds. The majority of data on antimicrobial effectiveness is based on in vitro or in vivo studies rather than high quality clinical evidence. The most common products include a large variety of silver agents, including creams, gels and dressings, iodine based products and more recently polyhexanide. This presentation will provide a brief overview of antimicrobial agents, concerns related to the eradication of bacteria in heavily and critically colonized wounds, and present the data and justification of polyhexamide as a first choice agent in decreasing the bacterial burden in open wounds of varying aetiologies.

Applying the “5 moments of hand hygiene” O71

Claire Kilpatrick

World Health Organisation, Geneva, Switzerland

My Five Moments for Hand Hygiene is revolutionizing infection control education and practice. This simple concept forms a core tenet of the WHO Hand Hygiene Improvement Strategy and is an important tool for success. It has been tested and applied in a range of countries, and cultures, including a number of developing world settings.

Its aim is to streamline and simplify the number of times hand hygiene needs to occur within health care. It is concerned with promoting hand hygiene only at those moments within care and treatment sequences which are likely to yield the maximum return in terms of patient safety. Infection control leaders including nurses and doctors, play a crucial role in health care systems strengthening. My Five Moments should be central to this and part of any integrated infection control strategy of the modern age.

The workshop will provide an opportunity to share the outcome of field testing of the WHO Guidelines on Hand Hygiene in Health Care with an emphasis on the universal applicability of My Five Moments, along with examples of where the My Five Moments have already been applied. The package of supportive tools, including the training DVD with its simulated scenarios, and the Technical Reference Manual will be included within the workshop together with real-life application. My Five Moments is an exciting innovation for infection control practitioners. It has the potential to make hand hygiene improvement “sticky” and thus contribute significantly to sustainability and spread.

O72 MRSA policies in Europe

Smilja Kalenic

Clinical Hospital Centre Zagreb, Zagreb, Croatia

Background

In November 2008 representatives of 12 European scientific and professional societies involved in healthcare-associated infection (HCAI) prevention met in Berlin to start a discussion about the collaboration in the field of HCAI prevention and control. One of the particular topics of the discussion was prevention and control of MRSA in respective countries, as this was identified as current major issue in infection prevention and control. National representatives presented basic MRSA prevention and control data in a short talk at the meeting. As the incidence/prevalence of MRSA is very different amongst European countries, the decision was to compare different methods of prevention and control of MRSA, with a goal to learn from each other and share management strategies to assist action at the local level.

Methods

Tables were produced with comparative data presentation from the national/regional guidelines, based on presentations during the meeting.

Results

Although the incidence of MRSA varies very much between the countries, there was only very few differences in national/regional guidelines: countries with very low incidence had guidelines developed earlier than countries with high incidence, had always single room for isolation, regulated MRSA control in nursing homes and general practice, and almost all also use decolonisation in every MRSA carrier. Practically all other issues are equally covered in all guidelines. Are these differences enough to have low MRSA incidence or the issue is more complicated – we will try to discuss it in the buzz group.

Reducing healthcare associated infections Air sterilisation O73

Peder Bo Nielsen

Northwick Park Hospital, London, United Kingdom

MRSA and *Clostridium difficile* have for decades haunted the healthcare systems of the Western World. Fortunately, it seems that the tide has turned, but other multi-drug resistant organisms are on its raise, such as ESBL and *Acinetobacter baumannii*. The situation is aggravated by the imminent community threat of pandemic flu – Avian and Swine Flu.

This presentation will focus on the environment and its importance in controlling healthcare associated infection (HCAI).

In UK the "Saving Lives Programme" has been the main action against HCAI with focus on hand washing and alcohol gel. Further programmes included cleaning, but none of them used microbiological tests as measure for cleanliness.

Our data showed wide spread contamination with MRSA and in selected wards up to 88% of all bed areas were contaminated. We also showed that the contamination was not confined to "areas of hand contact" but also to "none touch areas" such as ceiling, high on wall, etc. Clearly, hand washing alone was not sufficient to control HCAI.

We realised that in clinical areas within the bed room there were no available equipments to interrupt the transmission between environment, patient and staff apart from personal protective equipments. Air is always sterilised before entering the room or after being extracted from the room. Therefore we installed UV light air sterilisers within the room. This simple mobile unit was able to reduce the environmental MRSA contamination with 61%, and it prevented colonisation of patients completely.

It was also installed in a Trauma ward with endemic *C. difficile* diarrhoea. The number of cases was reduced by more than 80% to a few cases per year.

Today the applications are more versatile. We use it for patients with MRSA, *C. difficile*, Norovirus and *Acinetobacter baumannii*. It is placed in clinical risk areas such as Intensive Care Unit but also in a TB examination room for testing for TB by induced sputum. It is also used to contain the spread of Swine Flu by being placed in patients' waiting room, examination room and bed rooms.

Our results show that albeit hand washing is the main preventive measure against HCAI controlling the air borne component of transmission of microorganisms is also essential for success.

O74 Clinical Waste Management

Edward Krisiunas

Waste Not Want Not International, Burlington, Connecticut, USA

The management of clinical waste from healthcare facilities is a relatively new practice. It was approximately 50 years ago that single use disposal syringes were invented. The use of sharps containers was introduced in the mid 1980s. Since then, a large number of other disposable products have entered the market and contributed to the increase in the amount of waste being generated. A number of low and middle income countries continue to reprocess single use items (both critical and non-critical) as a cost savings measure and/or to extend the life of products being used. Strategies need to be formulated where only truly potentially infectious materials are generated. In high income countries, clinical waste is likely to be an occupational hazard. However, in low to middle income countries, the potential exists for both occupational and the public to have exposure to clinical waste. Proper management of clinical waste encompasses several steps: Proper identification, segregation, collection, and treatment/disposal. The waste stream in a healthcare facility is not limited to waste with an infectious component. Other waste stream has been identified that also need special attention and segregation and are often generated in the same areas as infectious clinical waste. These waste streams include pharmaceutical agents, hazardous waste, and solid waste (for which there is a potential for recycling). Some technologies have been introduced to treat these waste streams. A careful assessment must be conducted to ensure waste that is potentially infectious is properly treated. Some new approaches to management of sharps also include the use of reusable containers. These containers can have up to 500 reuses before needing to be discarded, thereby eliminating disposal and processing cost as well as the purchase of single use containers. Each country must establish basic waste management practices that ensure patient as well as staff safety and also minimize environmental impact. Various references and resources are available from WHO, UN, and other NGO groups researching clinical waste management.

IFIC Special Interest Group-Hand Hygiene O75

Nagwa Khamis [1], Gertie Van Knippenberg-Gordebeke, Laura E. Martinez-Solano

[1] Ain Shams University Specialized Hospital, Cairo, Egypt

Objective

- To get familiar with the 5 moments for hand hygiene
- Group work to discuss the 5 moments in their own healthcare settings
- To learn from each other different aspects
- To gain ideas for implementation of the 5 moments

The 5 moments for Hand Hygiene is one of the specific recommendations in the WHO Guideline on Hand hygiene in Healthcare, to improve practice and reduce transmission of pathogenic micro organisms to patients and all Healthcare workers (HCWs).

The new concept

"Hand washing only when visibly soiled, otherwise use hand rub with alcohol" has to be promoted and taught. The concept must be learned, understood and accepted by all HCWs.

The 5 moments for hand hygiene are numbered according to the habitual care workflow. The concept of "My 5 moments for hand hygiene" aims to:

- giving HCWs clear advice on how to integrate hand hygiene in the complex task of care
- be practical
- be easy to remember
- be simple as it is straightforward
- be specifically tailored to be observable.

The session will be conducted as follows

1. Introduction and meaning of the workshop (5 minutes)
2. The group will be divided into 5 sub-groups
3. The sub-group will handle one moment (30 minutes). For each moment discussion of problems and solutions, in their own setting, will be conducted, e.g. personal experience, facilitation and availability of materials, technique, budget, compliance, support management)
4. The groups will discuss the practice in different settings using the targets:
   - advocacy
   - information
   - monitoring
   - education
5. Plenary (25 minutes). The sub-groups will present in 4 minutes the results to the whole group.
6. Conclusion and recommendations.

O76 Safe Childbirth and Infection Prevention

Patricia Lynch

Epidemiology Associates, Redmond, Washington, USA

Approximately 4 million neonates die every year in their first 28 days of life, most in low-resource settings of all countries. Neonatal deaths account for over one-third of the global burden of child mortality. In a major review, reported rates of neonatal infections in low-resource settings were 3-20 times higher than those reported for hospital-born babies in industrialized countries. Even in affluent countries there may be significant differences in neonatal survival and infection rates between the top and bottom economic quintiles.

Approximately 500,000 women die during or soon after childbirth but this low figure masks the true toll: millions more are disabled for life by fistula and other childbirth complications. Care practices by untrained birth attendants greatly increase risk for potentially preventable infections, prolonged labor and vaginal tears during delivery. Commonly, pregnant women deliver at home with untrained assistants helping them; these women lack access to adequate care.

The International Nosocomial Infection Control Consortium (INICC) reported a broad range of infection rates in newborn ICUs but most were 3-6 times higher than the benchmark. However, all showed a substantial reduction when they applied appropriate hand hygiene and other principles of infection prevention.

For such a major infection problem to be solved, the IC societies must at least be involved, if not providing major leadership, and combining effort and skills with maternal-child and public health organizations. IFIC supports such efforts and has called for proposals to develop programs to accomplish this by local hospitals and the infection prevention societies.

SUNDAY

Prepare an abstract and project proposal O77

Patricia Lynch

Epidemiology Associates, Redmond, Washington, USA

Research is essential to progress in this evolving part of health care. Nurses, physicians and others must capably develop research proposals and report results at least in the form of abstracts. Investigations may explore new territory, they may identify a "better way" or refute a wrong way. Publications make the result available to practitioners who need to know. Successful proposals and competent abstracts also increase the author's potential for raising funds for more research and reporting results at conferences. Many successful investigators start from their own work experience, conversations with others, "hot topics" and the literature.

Literature review is an essential first step to evaluate a good idea, to summarize the applications that pertain to it and to develop the research question to be investigated. Online literature search tools such as PubMed are available and should be used. Potential funders will evaluate the results of the review. Proposals also include the title, vision for the successful project, the specific need the project fills and the goals, objectives and timetable, budget, stakeholders and potential partners, and possible benefits to society and to the potential funder. Drafts of the proposal and application should be reviewed by an objective, experienced senior, and they should conform very closely to any directions provided.

Once completed, the manuscript should be submitted to the most appropriate venue since the same study may NOT be submitted for publication again. Abstract formats are generally either scientific or programmatic. Scientific abstracts follow this format: Background including objectives and hypothesis, methods description, results summarized briefly with appropriate statistical analysis, and conclusions that fully address implications and conclusions. Programmatic format is different: state the issue or problem evaluated, project description and methods, results and lessons learned.

O78 Dynamics of MRSA transmission

Hajo Grundmann

National Institute for Public Health and the Environment, Bilthoven, The Netherlands

Original studies on the transmission of MRSA in hospitals and Intensive Care Units led to the appreciation of a limited diversity of *S. aureus* and the inherent limitations of molecular typing as a useful tool in endemic situations. Population-based studies on staphylococcal carriage supported these findings and multilocus sequence typing (MLST) showed the evolution of *S. aureus* to be predominantly clonal. Thus the limited number of clonal lineages allow for describing the spatio-temporal spread on large geographic scales. This led to an improved understanding of the dynamic dissemination of MRSA through regional health care networks. Mathematical models help predict the spread of MRSA and allow the identification of crucial control points during the evolution of national epidemics.

O79 Infection control recommendations for acute respiratory infections: the new WHO package and its field evaluation in eastern European countries

Ana Paula Coutinho

World Health Organization, Copenhagen, Denmark

Abstract not available

O80 New WHO policy or TB infection control

Rose Pray

World Health Organisation, Geneva, Switzerland

TB is an infectious disease that is spread when people who have an active TB infection cough, spit or sneeze. The disease is preventable and curable, but is becoming more difficult to treat because of an increase in drug-resistant strains of the bacterium that causes TB. The infection is also becoming more common as the number of people infected with the human immunodeficiency virus (HIV) increases – people with HIV are more likely to develop active TB. Thus, TB infection control is an important global health issue.

The World Health Organization (WHO) has developed an evidence-based policy to help countries to implement TB infection control. The policy focuses on what to implement in terms of TB infection control measures at the national and subnational level; it also provides specific guidance on how to reduce the risk of TB transmission in health-care facilities, congregate settings (such as prisons) and households.

TB infection control refers to measures that, in combination, minimize the risk that a person with infectious TB will transmit the infection to someone else. Such control requires early and rapid diagnosis of the infectious cases and proper management of TB patients. Also important are measures to control HIV,

strengthen health systems and improve coordination between health authorities, technical partners and civil society. Because TB infection control cuts across disciplines, its successful implementation requires sustained political, institutional and financial commitment.

O81 Main challenges for TB infection control in Europe

Lucica Ditiu

World Health Organisation, Copenhagen, Denmark

Abstract not available

O82 Ventilation and Reduction of Infectious Risk

Carmem Pessoa-Da-Silva

World Health Organisation, Geneva, Switzerland

Detection of pathogens in room air and buildings may suggest a possible, indirect association between ventilation and disease transmission. However, other aspects (e.g. necessary infecting dose, susceptibility of the host, infectivity of the pathogen, survival of the pathogen after exposure to physical challenge and other environmental factors) are important for determining the ability of a pathogen to be transmitted. In fact, insufficient ventilation can increase transmission of some infections, and adequate ventilation in all patient-care areas is necessary to help prevent this spread.

Infectious agents that have been demonstrated to be transmitted over long distances include *Mycobacterium tuberculosis*, rubeola virus and Varicella-zoster virus. Preventing the spread of airborne infections involves implementing Airborne Precautions, which requires the three controls: administrative controls; engineering controls - patient room with special air handling and ventilation (airborne precaution room); and personal protective equipment - the use of particulate respirators by health-care workers, whenever possible. Airborne precaution rooms can be naturally or mechanically ventilated.

Mechanically-ventilated airborne precaution rooms are equivalent to the 'Airborne Infection Isolation Room' described by CDC (US) ., and should provide:

- monitored negative air pressure in relation to the surrounding areas;
- 12 ACH; and
- appropriate discharge of air outdoors, or monitored high-efficiency particulate air (HEPA) filtration of room air before it is recirculated to other areas in the hospital.

The new WHO Guideline *on Natural Ventilation for Infection Control in Health-Care Settings* (in press) suggests the following standards for ventilation requirements if natural ventilation is applied:

- For natural ventilation, the following minimum hourly averaged ventilation rates should be provided
- 160 l/s/patient for airborne precaution rooms (with a minimum of 80 l/s/patient)
- 60 l/s/patient for general wards and outpatient departments
- 2.5 l/s/m3 (m3 or volume of the space in question) for corridors and other transient spaces without a fixed number of patients.
- When designing naturally ventilated HCFs, overall airflow should bring the air from the agent sources to areas where there is sufficient dilution, and preferably to the outdoors.

Is antimirobial resistance related to consumption and what can we do about it? O83

Dominique Monnet

European Centre for Disease Prevention and Control, Stockholm, Sweden

Abstract not available

O84 Do antibiotic policies have any impact on antibiotic resistnce?

Herman Goossens

University Hospital Antwerp, Belgium

Abstract not available

O85 Improving the evidence base for antimicrobial stewardship interventions: the ORION approach

Barry Cookson

Health Protection Agency, London, United Kingdom

Antimicrobial stewardship includes policy, training, audit and other interventions to produce sustained improvements in prescribing practices. The evidence base for strategies will be reviewed briefly. However, there is scant evidence to underpin guideline development in this field and the related field of infection prevention and control. The ORION statement (**G**uidelines for Transparent **R**eporting of **O**utbreak **R**eports and **I**ntervention studies **O**f **N**osocomial infection) has been published (Stone *et al*, *Lancet Infect Dis* 2007; 7:282–88). The objective behind developing the ORION Statement was to raise the standards of research and publication in antimicrobial stewardship and hospital infection prevention and control. The approach facilitates the synthesis of evidence and promotes transparency of reporting. The tools are aimed at researchers, editors, reviewers , and grant assessment panels. They have been produced by the teams that carried out the systematic review of isolation policies in the hospital management of MRSA for the Health Technology Assessment Board and the Cochrane review of interventions to improve antibiotic prescription practices in hospital patients. The original paper, a powerpoint lecture, two test papers and the answers are available at http://www.idrn.org/orion.php. We welcome any proposals as to how the website can be improved and feed-back on the utility of the approach: please respond via the www site or email barry.cookson@hpa.org.uk.

Why we need elimination guides in healthcare settings: the APIC experience O86

Kathy Warye

Association for Professionals in Infection Control and Epidemiology, Washington, USA

With the proliferation of guidelines from WHO, the CDC and other organizations invested in reducing healthcare-acquired infections, one of the most common concerns from those involved in infection prevention is that the guidelines do not always provide the necessary steps to put into practice the prescribed recommendations. In response to that need, since 2007 APIC has published five printed guides focused on the elimination of specific microorganisms or device-related infections, with plans to produce three more in the latter half of 2009 and three or more in 2010. APIC's elimination guides translate the recommended guidelines into a series of steps that any infection preventionist can take to reduce the risk of infections in their healthcare facility and bring the latest science to the bedside. From proper environmental cleaning steps to tools to assess risk in a variety of situations, APIC's elimination guides provide a wealth of resources to healthcare workers focused on preventing infections. In this session, APIC's Chief Executive Officer, Kathy Warye, will discuss the purpose behind these elimination guides and how they can be used effectively in facilities of all sizes and varied resources to reduce the transmission of deadly pathogens and maintain clean environments of care.

Disinfection and Sterilization: Navigating a Maze of Different Applications and Requirements O87

William A Rutala

University of North Carolina, North Carolina, USA

All invasive procedures involve contact between a medical device or surgical instrument and a patient's sterile tissue or mucous membranes. A major risk of all such procedures is the introduction of pathogenic microbes that could lead to infection. Failure to properly disinfect or sterilize reusable medical

equipment carriers a risk associated with breach of the host barriers. The level of disinfection or sterilization is dependent on the intended use of the object: critical items (such as surgical instruments, which contact sterile tissue), semicritical items (such as endoscopes, which contact mucous membranes), and noncritical items (such as stethoscopes, which contact only intact skin) require sterilization, high-level disinfection, and low-level disinfection, respectively. Cleaning must always precede high-level disinfection and sterilization. The high-level disinfectants recommended for semicritical medical devices in the US include: glutaraldehyde, ortho-phthalaldehyde, peracetic acid with hydrogen peroxide, accelerated hydrogen peroxide, hydrogen peroxide, and chlorine (650-675 ppm). The sterilization methods used in the US include: steam sterilization, ethylene oxide, hydrogen peroxide gas plasma, ozone, vaporized hydrogen peroxide and a peracetic acid immersion process. Users must consider the advantages and disadvantages of specific products and processes when choosing a disinfection or sterilization process. In addition, this presentation will address the special concerns with disinfecting semicritical items and noncritical items/surfaces contaminated with *C. difficile* spores. Adherence to these recommendations should improve disinfection and sterilization practices in health care facilities, thereby reducing infections associated with contaminated patient-care items.

O88 Prevalence surveys – an easy and useful way to get an overview

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Institute of Public Health, Oslo, Norway

Background

Nosocomial infections are common and important cause of illness, and death among residents in long-term care facilities (LTCF) and hospitalized patients. Surveillance is important to get an overview of the magnitude and distribution of infections, and to identify need for infection control measures. Point prevalence surveys have been performed in LTCF and hospitals in Norway twice a year since 2002.

Methods

All LTCF and hospitals in Norway are invited to participate in two prevalence surveys each year. All inpatients/residents in the institutions at 08.00 are included. A physician and a nurse are assigned to collect data. Infections are diagnosed according to standardised criteria. The surveys are limited to include only the four most common NI and only aggregated data are collected. Nosocomial infections are recorded separate for each of the different department types. Most institutions are using a web-solution for entering data and receiving survey reports.

Results

Almost all hospitals and about 50% of the LTCF beds are included in each of the surveys. The prevalence of NI in hospitals is around 6% and around 7% in LTCF. The surveys also provide information about the prevalence of the different types of infections and by different departments and geographical areas. Seasonal variations are also detected.

Conclusion

The surveys are easy to perform and provide information about where and which type of infections that should be targeted with further infection control measures.

Incidence surveillance in institutions with few resources O89

Anja Ramberg Saether

Institute of Public Health, Oslo, Norway

Background

Nosocomial infections lead to additional burden like increased hospital admissions and mortality rates for institutionalized elderly patients. Point prevalence surveys has been performed in long-term care facilities (LTCF) in Norway twice a year since 2002.

Many LTCF want to implement prospective surveillance of infections and antibiotic consumption to get detailed information about their treatment and infection control practice. A national protocol has therefore been

developed to perform incidence-based surveillance in institutions with limited resources. A pilot study was conducted in two LTCF in spring 2008.

Methods

The following new infections occurring during the 4-month surveillance period will be recorded: urinary tract-, lower respiratory tract-, surgical site- and soft tissue infections. Head nurses and attending physician will perform the registration, using the surveillance form, as part of their daily routine. The infections are to be diagnosed according to definitions prepared by a Canadian research group (McGeer 1991) recommended by CDC. All residents receiving systemic antimicrobial treatment or prophylaxis will be recorded, including variables like date of prescription, type of antibiotic drug, length of treatment, daily dose and prescribing physician. Non-identifiable data on a resident level will be collected for analysis and reports using a simple internet-based application.

Results

The surveillance system has shown to be easy accessible and the health personnel involved in the pilot study found the recording less time-consuming that expected. Regarding the forms to be filled out there were few misunderstandings and systematic errors.

Conclusion

It seems feasible to introduce a system for measuring the incidence of health care associated infections and antibiotic usage in institutions with limited resources. The surveillance system will be implemented in all Norwegian LTCF from 2010-2011.

O90 Surveillance of antibiotic use

Hege Salvesen Blix

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Background

A large proportion of antibacterial use in long-term care facilities (LTCF) may be inappropriate. There is, however, limited knowledge on how antibacterials are prescribed in LTCF and there is a need to put up simple surveillance systems that may help improving quality of antibiotic prescribing in LTCF.

Objectives

To describe surveillance methods measuring the use of antibacterials in Norwegian LTCFs and to present data from studies using these methods.

Methods

Both annual administrative drug sales data and data from point prevalence studies were used. The ATC/DDD system were used for classification of drugs and measuring drug use. The main outcome measures from the point prevalence studies were: prescribed drug, indication, dosage and treatment duration for residents using antibacterials, in addition to patient and nursing home characteristics.

Results

Data retrieved by both methods in national surveys will be presented. The administrative data describe total institutional antibacterial use and patterns of use, while the point prevalence studies may indicate quality of drug prescribing according to indication.

Conclusions

The different methods are easy to conduct and may be used in all types of institutions. Both methods have been shown to be feasible to describe drug use in LTCF, also in institutions with limited resources. The methods give comparable descriptive data and the outcome should be compared with data from similar institutions. Comparison and interpretation of drug utilisation data may be valuable for the quality assurance of antibacterial prescribing in LTCF.

Norovirus outbreak in a hospital O91

Mari Kanerva

Helsinki University Central Hospital, Finland

Abstract not available

O92 Setting up surveillance of Clostridium difficile - associated infections: Finnish experiences

Outi Lyytikäinen

National Institute for Health and Welfare, Helsinki, Finland

Abstract not available

O93 National Resource for Infection Control (NRIC) - tackling the challenge of conveying guidance during the swine influenza A(H1N1) outbreak

Susan Wiseman, Ed de Quincey, Patty Kostkova, Gawesh Jawaheer

City University, London, United Kingdom

The present swine influenza A(H1N1) outbreak began in Mexico on 18th March 2009 and cases of swine influenza have now been confirmed in many countries around the world including the United Kingdom (UK). UK agencies such as Government Department's of Health, Health Protection Agency, and the NHS have focused for some time on producing guidance to improve UK preparedness for a future influenza pandemic with information available on individual websites and NRIC. The global nature of the outbreak has also meant that international guidance and news is available from the World Health Organisation (WHO) and ECDC sites. NRIC was launched in May 2005 to provide quick and easy links to relevant evidence based, policy, guidance and quality information, on infection prevention and control and related infectious diseases to infection prevention professionals and healthcare staff in a timely manner. Using NRIC web-server logs an evaluation was undertaken to examine whether as a single access point for existing resources in infection prevention, including pandemic flu guidance/news, the website has been a useful resource for infection prevention professionals. This presentation will describe NRIC traffic and searches during the present outbreak period April/May 2009, the documents most sought out and NRIC searches from other referrals, which highlight that most traffic was from infection professionals who were already familiar with the site but not accessing pandemic flu information prior to this period. The aim is to continue to chart use of the site using web-server logs during the expected second wave of the outbreak this winter.

O94 Hospital isolation precautions within limited recourses

Hala Badawi, Manal El Said, and Omer Helmy

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Background

In situations with the possibility of large-scale infections (such as avian and swine flu), it is likely that the community will be interested and affected indirectly by hospital isolation precautions. Often, community members who present at the emergency department as concerned about their level of exposure are referred to as "the worried well." This implies that there is nothing wrong with the person, and the best treatment for them is to "go home" as their presence appears to hinder the "real work" of the hospital.

Objectives

In resource-limited settings lacking negative-pressure respiratory isolation, natural ventilation by opening windows should be stressed for the control of nosocomial airborne and droplet infections.

Recommendations

For infections spread by particles that remain suspended in the air (TB, measles, varicella, and variola), airborne Isolation to be followed includes: "Negative pressure room is not needed instead naturally ventilated rooms that allow fresh air exchange through two opposing openings (windows or doors) not passing by the patients. This is particularly suitable in developing countries with nice weather and in the mean time couldn't afford the high expenses and maintenance of mechanically

ventilated rooms. The exhaust air should be away from people through the hospital design that should be put into consideration in any reconstruction or establishment of new departments "Surgical mask on patient "N-95 mask for personnel inside negative pressure room "Isolation room air should not be recirculated in the building For infections spread by large droplets generated by coughs, sneezes, etc. (e.g., Neisseria meningitidis, pertussis, influenza), droplet Precautions to be followed includes: "Face shield or goggles, and a surgical mask (not N-95) are worn to prevent droplets reaching the mucous membranes of the eyes, nose, and mouth when within 3 feet of then patient "Patients should be separated by 3-6 feet, or be grouped with other patients with the same infection/ colonization status "Patient should wear a surgical mask when outside of the patient room "Negative pressure room is not needed It was found that opening windows and doors provides Median ventilation of 28 air changes/ hour More than double that of Mechanically ventilated negative-pressure rooms ventilated at 12 air changes/ hour (recommended for high-risk areas). Propeller fans are inexpensive way to increase the effectiveness of natural ventilation by: "Increasing the mixing of airborne microorganisms. "Assisting in the direction of air movement by pushing air. In the developing world, most airborne infections occur when: "Isolation facilities are sparse, "Effective mechanical ventilation is often too costly to install or maintain, "Respirator use is infrequent, and "Wards and waiting areas are frequently overcrowded. Consequently, transmission of airborne infections to staff, relatives, and other patients is more common Five Steps for Patient Management to Prevent Transmission of Respiratory infections: 1-Screen: Early recognition of patients with suspected or confirmed cases. 2-Educate: cough hygiene 3- Separate: in a separate well-ventilated waiting area 4- Provide Services: quickly provide care 5- Investigate: diagnostic tests should be done onsite or the facility should have an established link with a diagnostic center to which symptomatic patients can be referred.

Factors Affecting the Development of Nursing Students Intentions and patterns of adherence to commonly used Standard Precaution (SP) Guidelines

O95

Ilana Livshiz-Riven, Ofra Anson

Ben Gurion University, Beer-Sheva, Israel

Background

The socialization process of nursing students in the domain of infection control and prevention is affected by cognitive and social factors. Like with the professional health care workers (HCWs), students and young graduates compliance with the infection control guidelines is less then the optimum.

Aims

To examine the influence of factors as Safety Climate (SC), leadership, Sense of Coherence (SOC), knowledge and professional risk perception on the development of behavioral intentions and patterns of compliance with commonly used Standard Precaution (SP) guidelines (e.g. hand hygiene, glove use and safe disposal of used sharps). Method: Two consecutive classes of a four-year BN nursing program were asked to fill self-administered questionnaires three timed during their formal training, Time1- second year with minimal clinical exposure. Time2- third year major clinical courses. Time3- end of forth year-end of program.

Results

Eighty five of 91 students (92%), 65%, 85% responded in the second, third and at the end of the program respectively. At the end of the third year, SC and SOC correlated positively with intentions and patterns of adherence (r=31, p< 0.05r=27, p<0.05 respectively). At the end of the educational program, a multiple linear regression (F(3,38) =3.52, R2=0.22, p=0.02) revealed that students' levels of knowledge from the third year (^{2} = 0.37, p=0.01) and the SC perceived during their second year in school (^{2} = 0.28, p=0.058) are influential factors on the intentions of the students.

Conclusions

The knowledge acquired by nursing students during the early years of their formal training, and the safety climate perceived by the students during their first interaction in the clinical setting have influence on the intentions to adhere to and patterns of adherence to commonly used SP at the end of the four-year training.

O96 Aseptic Non touch Technique (ANTT): Standardising Clinical Practice Across Large Clinical Staff Groups

Stephen Rowley, Simon Clare

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Aseptic technique is increasingly recognised as the last opportunity to minimise the risk to patients from healthcare associated infection (HCAI) during clinical procedures. Aseptic Non Touch Technique (ANTT) recognises this and is based on the premise that reducing the variables in aseptic practice across large workforces, by standardising aseptic technique, will improve quality of practice and subsequently improve HCAI trends.

ANTT is the most commonly used aseptic technique in the National Health Service (NHS); adoption is currently estimated at between 200-300 hospitals in England, based upon resources provided to 76 (44%) of the 173 acute NHS trusts. The uptake of a single aseptic technique across this large staff group has afforded the ANTT development team a unique perspective of aseptic practice and management across the NHS.

The ANTT project has created a framework for practice that provides for the development of an evidence base, and the creation of peer reviewed clinical guidelines that promote the use of standardised aseptic practice in a range of common clinical procedures. Clinical staff are taught to assess risk by identifying key-parts and key-sites; emphasising the protection of these key areas and components throughout any procedure. The only thing that changes, according to defined criteria, is the level of infective precautions and size and management of the aseptic field.

This approach, used as a 'best practice' exemplar by the epic 2 project, combined with a robust implementation programme, successful in establishing guideline compliance across large clinical workforces, has provided NHS Trusts with a standard structure by which to train and assess, monitor and enforce best practice aseptic technique.

The ANTT development team will report on findings from ANTT implementations since 2004.

Introduction to the fungi and the diseases they cause O97

Ira F Salkin

Information form Science LLC, West Sand Lake, New York, USA

This presentation will provide participants with an overview of the biology and physiology of the etiologic agents of mycotic diseases. It will describe those fungal features that are similar to other microorganisms, but more importantly, those characteristics that are so different that the fungi are recognized as a unique kingdom of living forms. We will describe how many of these characteristics are critical in fungal pathogenesis and how they can be used in the clinical diagnosis of human mycoses. Beyond their ability to cause infectious diseases of man and animals, fungi play important roles in various aspects of public health. For example, we will describe several of their metabolic by-products such as penicillin and cephalosporins, both of which as beta-lactams are effective bactericidal agents. If you were to use the search term, "sick building" in Google you would find over 50,000 hits and we will discuss the possible involvement of fungi in a number of clinical symptoms related structural water damage or the indoor air environment. We will describe that of the 1.5 million fungal species, 200,000 are plant pathogens as opposes about 150 that cause human disease. Consequently, the fungi have a serious impact on food production which can directly affect public health in industrialized and non-industralized countries. Finally, we will touch upon the appropriate precautions that should be employed in the recovery or detection of fungi in environmental and clinical samples.

O98 Prevention of invasive aspergillosis

Smilja Kalenic

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Background

Improvement of the treatment of malignant diseases and transplantation medicine has resulted in increasing number of immunocompromised patients. In addition to other infections, specific problem in these patients is invasive aspergillosis, because of severe clinical presentation, problems in diagnosis and in treatment. Aproximatelly 6-11% of patients with allogeneic haematopoetic stem cell transplantation (HSCT) will develop an invasive aspergillosis with high mortality rate.

Sources

Aspergillus species are ubiquitous in nature (in soil, plants, water). Conidia are in high numbers present in air and inhalation of conidia is primary means of infection/colonization of patients. *Aspergillus conidia* are particularly numerous in air in case of demolition, construction and renovation in hospital. Increased numbers of conidia are found after using showers. Nevertheless it is not clear if there is a correlation between number of conidia in air and appearance of infection/colonization in susceptible patients. Source of aspergilli conidia could also be a food (pepper, tea), but infection means probably also is inhalation, not ingestion.

Prevention

Preventive measures are developed mostly for patient with allogeneic HSCT, and consist of positive pressure room with HEPA (high-efficiency particulate air) filters; when the patient leaves the room, he/she should wear plain surgical/N95 mask (depending on risk); showering should be avoided, sterile water could be used for washing during deep neutropenia; food, including tea should be cooked, and spices should not be used during neutropenia; environmental hygiene should be enhanced. Further preventive measures are shortening of neutropenia using haematopoetic growth factors, and prophylactic use of antifungal agents.

Is outcome surveillance really necessary? O99

Nizam Damani

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Surveillance has been described as systematic collection, analysis, and interpretation of data on specific events (infections) and disease, followed by dissemination of that information to those who can improve the outcomes.

There are two types of surveillance: *Outcome surveillance*: The aim is to 'count' the number of healthcare associated infections. *Process surveillance:* The aim is 'observe/monitor' practice against a set standard on a regular basis until the practice meets the recommended standard. It indicates whether hospital personnel are actually carrying out written policies or procedures or not.

However, outcome surveillance is an expensive and time consuming business. It requires trained infection control personnel, IT support (both hard and software), admin & clerical staff for input of data, statisticians and good microbiology laboratory support. These resources are not always available in most countries. In addition, the job of trained infection control personnel must be directed to *prevent* and *control* infections; their time and expertise must not be utilized in doing outcome surveillance (*counting* infections) only.

Process surveillance relies on preventing infection by monitoring implementation of evidence-based practice with aim to prevent healthcare associated infections. This approach is proactive and has been applied by the airline industry who devoted their entire resources in preventing catastrophes ('process' monitoring) with emphasis on early identification and immediate intervention rather than counting ('outcome' monitoring) disasters; an approach that has been traditionally applied in a healthcare setting.

This presentation will argue that it is time that we must learn lessons from the airline industry and should take a more proactive approach and divert more resources in process monitoring to reduce healthcare associated infections.

O100 Policing Antibiotic policies

Candace Friedman

University of MIchigan Health Systems, Michigan, USA

This session will explore ways in which infection control teams can help monitor compliance with antibiotic policies and reduce risks of emergence of multiresistant bacteria.

There will be a short lecture on how to make decisions to identify which elements of policies should be monitored. It will include a discussion of guidelines and standards of practice within an antibiotic stewardship framework. Performance measures, including a possible antibiotic bundle, will be outlined.

Developing a bundle involves the use of evidence-based information, the creation of indicators, and testing of the indicators. For example, a bundle for antibiotic treatment of urinary tract infections may look like the following:

1. Perform a urine culture
2. Prescribe empirical therapy
3. Use fluoroquinolones only as oral therapy
4. Change empirical therapy to pathogen-directed treatment when culture results available
5. Initiate therapy within 4 hours after clinical presentation

Monitoring the policies will help determine compliance and then need for any additional training. The session will end with a general discussion to identify what methods work and which do not.

Poster Presentations

P1 Skin Moisturisation Performance Assessment of Healthcare Hand Sanitisers

James W Arbogast, Sarah Edmonds, Todd Cartner, Barry Reece

GOJO Industries, Akron, Ohio, USA

Introduction/Aims

Hand sanitisers are used frequently by healthcare workers and are often implicated with drying skin, despite omnipresent skin care claims. Past efforts have shown the clinical laboratory skin care performance of products can be effectively used to evaluate hand cleanser performance and predict skin effects of HCW's. The primary aim is to determine the skin moisturisation performance of a broad range of European instant hand sanitisers (IHS), as compared to a novel 70% ethanol foam IHS, specially formulated to enhance moisturisation.

Methods

Objective skin moisturisation assessment can be measured with standard bioengineering devices used according to European Group for Efficacy Measurements of Cosmetics (EEMCO) Guidelines. The volar forearm of subjects were pre-washed and dried for 30 minutes prior to taking baseline measurements using a corneometer. Test articles were applied (2mg/cm2) and skin moisture measurements were taken at 10 and 120 minutes following application. Changes in moisturisation relative to baseline for each product were determined using a paired t-test, and differences between products were analysed using ANOVA with post hoc analysis ($P<0.05$). Results: The novel 70% ethanol foam IHS significantly increased skin hydration 10 minutes and 2 hours after application, and was superior for skin moisturisation to other IHS foams making moisturisation related claims. Other differences between test articles were observed.

Conclusions

The presence of ingredients claimed as moisturisers in an IHS formulation is not sufficient to significantly increase skin hydration. Therefore, moisturisation claims can be misleading, and should be supported with actual performance data, not based on ingredient information alone.

P2 Molecular analysis of drug-resistant Mycobacterium tuberculosis clinical isolates from central Poland

Ewa Augustynowicz-Kopeæ, Monika Kozińska, Anna Zabost, Magdalena Klatt, Tomasz Jagielski, Sylwia Brzezińska, Agnieszka Napiórkowska, Zofia Zwolska

National Tuberculosis and Lung Diseases Research Institute, Warsaw, Poland

Introduction

Drug-resistant tuberculosis, and particularly multidrug-resistant tuberculosis (MDR-TB is an increasing health problem and a serious challenge to TB control programmes. Information concerning susceptibility patterns of *Mycobacterium tuberculosis* isolates to tuberculosis drugs is an important aspect of tuberculosis control and surveillance.

Materials and methods

A total of 48 clinical isolates of *M. tuberculosis* representing 48 non-related, adult patients with resistant pulmonary tuberculosis in central Poland

(Mazovian Voivodeship) in 2004 were analysed by spoligotyping and IS6110-Mtb1/Mtb2 PCR.

Results

Among strains tested, 26 distinct spoligotypes were identified. Unique spoligotype patterns were observed in 19 (39.6%) isolates and the remaining 29 (60.4%) isolates were grouped within 7 clusters, made up of 2-8 isolates. When compared with an international database SpolDB4, 13 (27.1%) of the 19 unique profiles shared already described spoligotypes, whereas the rest 6 (12.5%) did not match any existing spoligotype and were defined as orphans. Interestingly, two members of the Beijing family were identified. Two clusters, comprising 2 and 4 isolates, respectively, were identical both with spoligotyping and IS6110-Mtb1/Mtb2 analysis.

Conclusions

A total of 12 isolates were clustered by spoligotyping in combination with IS6110-Mtb1/Mtb2 PCR. Spoligotyping was shown to be useful as a pre-screening genotyping method to be followed by another technique of greater discriminatory power, such as IS6110-Mtb1/Mtb2 PCR.

P3 Multidrug Resistant Pattern and Antibiotic Policy Challenge in A Tertiary Care Research Institute Hospital in Egypt

Hala Badawi, Manal El Said

Theodor Bilharz Research Institute, Giza, Egypt

Background

Problems with multi-drug resistant microorganisms (MDRO) including Enterobacteriaceae producing extended spectrum ß-lactamases (ESBLs) and methicillin resistant *Staphylococcus aureus* (MRSA), in hospitals have been increasing world-wide resulting in difficult-to-treat infections due to limited treatment options, delay in proper interference due to difficulty in their detection with deleterious impact on clinical outcomes. For any individual patient with an infection, an antibiotic susceptibility report is typically issued, detailing the susceptibility of the particular organism to multiple antibiotics. In an individual institution, cumulative antibiotic susceptibility reports on multiple patients (antibiograms) can be constructed in order to aid with appropriate antibiotic choice. Antibiotic use in hospitals can be classified into 4 categories: Prophylactic, empiric, pathogen-directed (specific) or susceptibility-guided (therapy). Objectives: This study was designed to assess the epidemiological evolution of ESBLs and MRSA clinical isolates in Theodor Bilharz Research Institute (TBRI) hospital, so as to evaluate the antibiotic policy and infection control program.

Methods

TBRI hospital is a 3ry care hospital with 300 beds. Antibiotic policy was implemented as a part of IC program since 2005. First, a surveillance study was done including infection rates as well as the most commonly encountered microorganism in different TBRI hospital departments. Second, a study of the antibiotics used for prophylaxis, empiric treatment and therapy was done using a well-designed form for data collection (from 1/1/2006 to 1/4/2009). Third, Data analysis was done and an antibiotic policy was proposed. Fourth, one year duration (1/7/2006-1/7/2007 1/7/2007-1/7/2008, 1/7/2008-1/4/2009,) was given for follow up and evaluation of the new policy. Fifth, rolling of antibiogram was done accordingly.

Results

Controlling hospital infection so that the infection rate could be lowered from 3.5% in 2006 and to 2.7% in 2007 to 3.8.% in 2008 and to 2.5% in 2009. The prevalence of MRSA was 0.2% in 2006, 2007 and 2008 and 0% in 2009 and that of ESBL was 22.7% in 2006 compared to 16.2% in 2007 and 9.17% in 2008 and to 8% in 2009. This together with decreased post-operative need for anti-biotherapy and consequently duration of hospitalization hospital re-admission and mortality rate. Duration of treatment courses was accordant in 55% in 2006 compared to 65% in 2009.

Conclusion and Recommendations

Our antibiotic policy with annual cycling was found to lead, over time, to a change in resistance patterns. Thus, it is prudent to update antibiograms and antibiogram-based antibiotic guidelines on regular

basis. On the other hand, it lowers uses of antibiotics diminishes expenses of managing hospitalized patients and lowers nosocomial infection rate. It also assists in antibiotic "streamlining", the process by which excessively broad-spectrum empiric antibiotic therapy can be switched to narrower spectrum therapy aimed only at the implicated pathogen(s).

P4 Avian and Swine Flu: Transmission, Pandemic Threatening, National Preparedness and Control

Hala Badawi, Manal El Said

Theodor Bilharz Research Institute, Giza, Egypt

Influenza pandemics must be taken seriously precisely because of their capacity to spread rapidly to every country in the world. Available evidence suggests that transmission of avian or swine influenza viruses occurs through multiple routes including large droplets, direct and indirect contact, droplet nuclei and bird or swine handling. The practices of home slaughtering, including defeathering, present the greatest risk of the disease being transmitted to humans in areas with poultry outbreaks as Egypt. Cumulative number of confirmed human cases of avian influenza A(H5N1) reported to WHO till 28 May, 2009 will be illustrated in attached table.

Regarding the number of cases and deaths globally, Egypt occupies the third position cumulatively and the first position in 2009. Cumulative Number of Confirmed Human Cases of Swine Influenza A/(H1N1) Reported to WHO till 29 May, 2009 was 15510 cases, 99 deaths distributed in 53 countries without involvment of any of the African countries. The main national preperdeness includes:

1. Adopting proper respiratory hygiene etiquette and hand hygiene practices.
2. Availability of PPE (N95 mask) and antiviral drugs.
3. Awareness campaign through meetings and broadcasting.
4. Designing and distributing posters for promoting respiratory hygiene/cough etiquette.
5. Training update on respiratory sampling and laboratory assessment.
6. Contact tracing.
7. The practices of home slaughtering, defeathering and other handling of the birds, should be prohibited.
8. Reporting channel to public health authorities via the local surveillance system.

P5 The situation of MRSA control in Lithuanian general hospitals

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Background

The prevalence of antimicrobial-resistant organisms is most common reason for complicated healthcare acquired infections (HCAI). Methicillin-resistant *Staphylococcus aureus* (MRSA) is a frequent cause of HCAI. The control of multiresistant microorganism is not regulated or guided by any national guidelines or other documents in Lithuania. So the main aim of study was to describe the situation of MRSA control in general hospitals.

Methods

40 general hospitals were randomly selected and invited to take part in this descriptive survey. Special questionnaire was prepared, which include questions about methods of MRSA detection, infections control precautions, screening methods. Data from 30 hospitals were received (response rate 75%).

Results

Hospitals reported 721 MRSA strains isolated in 2007 out of almost 8000 S.aureus, giving the MRSA prevalence rate of 9.1%. Most of the hospitals use only disk diffusion method for MRSA detection. Half of the hospitals have local MRSA control guidelines approved by hospital's manager. The data about infections control precautions were received from 22 hospitals MRSA patients are always isolated in less than half hospitals, and in that case most often hand antiseptic (80.0%), gloves (72.0%), gowns (68.0%) are offered on entrance. Individual medical and nursing equipment for MRSA patients is provided in 45.8% hospitals, separate staff in 12.5%. For MRSA prevention screening of patients

is performed in 7 (25.0%) hospitals and screening of staff in 13 (46.4%) hospitals.

Conclusions

The control of MRSA is not adequate in most of the hospital emphasising the need of national guidelines and education.

P6 Epidemiologic analysis of gram-negative-bacterium infection in neonatal intensive-care unit in general hospital

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Introduction

Neonatal intensive-care-unit infections by gram-negative bacteria have epidemiologic clinic impact as a consequence of their growing prevalence all over the world and addition to presenting worrying sensibility and resistance.

Objectives

Evaluating the clinical epidemiologic profile of neonatal intensive-care-unit infection by gram-negative bacteria aiming at setting up future strategies of effective prevention, control and treatment.

Methods

The infections cases were prospectively recorded for a four-year-and-half period from 2005; the program used was EPI-INFO v 3.4.1 for frequency analysis.

Results

42 cases of infection were recorded where only gram-negative bacteria were identified out of 71 cases with microorganism identification. The most prevalent gram-negative-bacteria were *Pseudomonas aeruginosa* (33, 3%), *Klebsiella* (21, 4%), *E. coli* (21, 4%) *Enterobacter* (19%) and *Serratia* (4, 76%). The most prevalent site of infection of each gram-negative bacteria was as follows: *Pseudomonas aeruginosa, Klebsiella* and *Enterobacter* accounted for bloodstream infection (21,4%, 44,4% and 62,5% respectively) whereas *E. coli* for gastroenterocolites (66,6%). Newborn having *Pseudomonas* infection stayed longer in ICU than other newborn without this infection (average of 50 days) as well as late infections from the admission date were more frequent (average of 23,7 days). These bacteria showed sensibility profile ranging from 44,4% to 100% to many antibiotics with microbiologic level test ranging from 78,5% to 100%.

Conclusion

From that analysis we have identified the predominance of fermentative bacteria with empiric antimicrobial possible schemes of treatment.

Tuberculosis – trends and challenges in Serbia P7

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Introduction/Aims

Republic of Serbia has been a country with a moderate incidence of TB. To describe the epidemiological TB situation and trends in Serbia in the period from 2000. to 2007.

Methods

The descriptive and analytical methods have been used.

Results

The incidence of TB in 2000 was 36,7/100000. In 2007 the incidence of TB was 27/100000. The ratio has significantly changed with respect to the previous period with an improved case detection rate of 77 percent. The regional differences are evident and range from 23% to 70.5%. Pulmonary and extra-pulmonary tuberculosis account for 93.6% and 6.4%.

Increase of newly diagnosed cases from year-to-year during the observed period is registered in the group above the age of 65, both females and males and group aged 45-54. Multi-Drug-Resistant TB does not

still seem to be a major problem. HIV infection does not significantly influence TB incidence yet. There is a wide implementation of DOTS.

BCG vaccination is mandatory, once at birth, with high coverage of newborns (98%). Population groups with increased risk for TB such as: Roma in slum dwellings, refugees, prisoners, Internally Displaced People(IDPs) in collective shelters and institutionalized mentally disabled people are not still well TB controlled.

Conclusions

There has been an improvement in TB control in country. Therefore effective TB control measures for early recognition of disease and proper case management have to be sustained despite falling case numbers.

P8 Simple solutions for significant problems

Deidre Edmonds

Austin Health, Melbourne, Australia

Introduction

Our 800 bed tertiary hospital in Victoria, Australia collect blood and body fluid exposure data. A 4 year review of percutaneous needlestick injury (NSI) data identified an upward trend in injury occurrence despite education to improve staff safety. Further review of the data identified many of the injuries could have been prevented if a safety device was available that engineered out risk.

Objective

To introduce a suite of safety sharps devices across our organisation to reduce percutaneous needlestick injuries and improve staff safety.

Method

Medical literature relating to reducing occupational exposure to blood and body fluids was reviewed and information regarding safety sharps products was obtained. Expert opinion from national colleagues was sought to determine the best available range of products. Following our review a range of safety devices were trialled to ascertain staff preference and acceptability. Trial findings were presented to our hospital Clinical Product Evaluation Committee who endorsed their introduction to improve staff safety. This endorsement and findings were then presented to the Hospital Executive who approved organisation wide implementation of the new safety suite.

Outcome

Our data indicated that percutaneous injuries at our Hospital were increasing in frequency. We researched how to engineer out risk of these injuries occurring. Staff were engaged in our trial and user acceptance was high. Based on our research, data and trial outcome, our Hospital Executive approved the new sharps safety device suite implementation across our organisation. A reduction in percutaneous injuries as a result of the implementation is now anticipated.

Nosocomial Bloodstream Infection in Neonatal Intensive Care Unit in Egypt P9

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Background

Bloodstream infection is associated with high rate of morbidity, mortality and increased length of stay. The objective of this study was to identify the incidence of nosocomial BSI, and the microbial pathogens in Kasr Al-Aini Hospital, Cairo University.

Patients and methods

A retrospective study conducted in the NICU over two time periods, the January 2004 - December 2004 and July 2007- 2008. Medical records of all patients with reported clinical signs of septicemia were reviewed. All organisms detected on blood culture were identified.

Results

A total of 1200 newborn infants were admitted over the study period, 571 in 2004, and 629 in 2007/08. Among them 76 had culture proven sepsis in 2004 (13%) and 109 had culture proven sepsis in 2007/08

(17.3%). The majority of cases in both time periods were caused by gram negative organisms (65.7% in the first period vs 74.3% in the second period). *Klebsiella* was the most common organism isolated in both periods, (28.9% and 38.5% respectively). A significant rise in the incidence of multidrug resistant *Acinetobacter* was observed between 2004 and 2007/08 (2% vs. 28.4%), and was responsible for more than 50% of mortality due to sepsis in the second period. *Salmonella* was common in 2004 (21%); but no cases were reported in the second period.

Conclusion

Gram negative sepsis occurred at high rates. Notably *Klebsiella* was predominant in both periods. *Acinetobacter* emerged in 2007-2008. These results call for an active surveillance a review of infection control policies and practices in the NICU.

P10 Endoscopes reprocessing quality control through *Helicobacter pylori*

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Introduction

Flexible endoscopy is essential for the practice of modern medicine. Gastrointestinal endoscopes are the most likely to be linked to the transmission of microorganisms. *Helicobacter pylori* have been reported to be a particular risk for patients and endoscopy personnel depending on the cleaning procedure. Automated washer-disinfectors and manual or semi-automatic cleaning/disinfection are the main methods for reprocessing of flexible endoscopes. Aim of study is to evaluate the efficacy of automated and manual decontamination process of the endoscopes through detection of *Helicobacter pylori*.

Methods

Gastrointestinal flexible endoscopes were tested at Copenhagen University Hospital, Rigshospitalet (Denmark) and Kaunas Medical University Hospital (KMUH, Lithuania). Before the endoscope was used for a patient the water canal was flushed with 10 ml. sterile water and the biopsy canal was brushed with small sterile cleaning brushes. The water samples were cultured on blood agar plates (20 spots with 10µl. water each). The brushes were transferred to eppendorf tubes with a suitable media for DNA extraction (Quiagen). DNA was used for species specific *H. pylori* PCR.

Results

75 endoscopes were tested from each hospital (KMUH and Rigshospitalet). At KMUH 10 endoscopes were reprocessed by endoscope decontaminator (ETD2 Plius, Olympus, Germany), 65 were manually cleaned and disinfected (Korsolex extra®). At Rigshospitalet all endoscopes were manual cleaned and reprocessed automatically in endoscope decontaminator (EDT2, Kenn, Denmark). In all 150 endoscopes germ count less than 4 bacteria per sample of 200 µl water. Samples from all 150 endoscopes were negative for H. pylori by PCR.

Conclusion

Transferring of *H. pylori* during endoscopy seems not to be a general risk caused by insufficient cleaning procedures but may rather be an occasional event independent of the cleaning procedures. This study did not show a higher hazard for transmission of *H. pylori* by one cleaning procedure than the other.

Are we forgetting common sense? Bed management and the effect on infection control P11

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Introduction

There are currently no guidelines for patient isolation in England and Wales and or on the proportion of single rooms that are required for isolation. Our aim was to show how current bed management can sometimes collide with the interest of infection prevention and put patients at risk to develop cross infections.

Methods

In this retrospective study we looked at the rate of possible cross infections in the total number of patients admitted to 3 orthopaedic wards over 5 days. We viewed patients with musculoskeletal infections (MSI) as possible source of cross infections. All remaining patients were categorised into "no", "high" and "low" risk for developing post operative infections depending on time period since operation and patient placement in 4-6 bedded rooms or isolation bays.

Results

Of 116 total admissions, 14 Patients were admitted with a musculoskeletal infection. The remaining 102 admissions comprised trauma patients as well as elective patients for hip and knee arthroplasty. 48% of those patients were put at "no", 9% at "low" and 43% at "high" risk. One case out of the group of "high" risk patients developed a superficial wound infection after hip arthroplasty caused by the same organism isolated from the MSI of the patients bed neighbour.

Conclusion

Common sense implies that it would be important not to place patients with MSis next to non infected patients. Reality shows that this is often not possible in clinical practice. Therefore one should be aware of this problem and should search for feasible solutions.

P12 Inactivation of murine norovirus as surrogate for human norovirus on inanimate surfaces

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Introduction

Human norovirus (NoV) causes more than 80% of nonbacterial gastroenteritis worldwide. NoV transmission via contaminated surfaces may be significant for the spread of viruses. Therefore, measures for prevention and control, such as surface disinfection, are necessary to interrupt the dissemination of NoV. Murine norovirus (MNV) as surrogate for human NoV was used to study the effectiveness of active ingredients of chemical disinfectants for virus inactivation on inanimate surfaces.

Methods

The inactivating properties of different chemical biocides were tested in a quantitative carrier test with stainless steel discs without mechanical action. Vacuum-dried MNV was exposed to different concentrations of alcohols, peracetic acid (PAA) or glutaraldehyde (GDA) for 5 minutes exposure time. Detection of residual virus was determined by endpoint-titration on RAW 264.7 cells.

Results

PAA [1000 ppm], GDA [2500 ppm], ethanol [50% (v/v)] and 1-propanol [30% (v/v)] were able to inactivate MNV under clean conditions (0.03% BSA) on the carriers by e 4 log10 within 5 minutes exposure time, whereas 2-propanol showed a reduced effectiveness even at 60% (v/v). Furthermore, there were no significant differences in virus reduction whatever interfering substances were used. When testing with ethanol, 1- and 2-propanol, results under clean conditions were nearly the same as in the presence of dirty conditions (0.3% BSA + 0.3% erythrocytes).

Conclusion

Disinfectants based upon PAA, GDA, ethanol and 1-propanol should be used for NoV inactivation on inanimate surfaces. Our data provide valuable information for the development of strategies to control NoV transmission via surfaces.

P13 The use of needleless connectors at six hospitals in western Norway

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Background

Infections associated with intravascular catheters and hubs are a considerable problem, and correct management is of great importance in order to prevent infections. A variety of needleless devices is increasingly used by various wards at the hospitals even though there are no recommendations to use them.

Hypothesis

Most wards do not have a clear reason for why they use needleless connectors. A few wards, however, have written procedures on management. Choice of device, or change to a particular device does not seem to be based on evidence or recommendations. Some wards do not have organized education of the HCWs who handle the connectors. Costs are probably substantial, but difficult to elucidate as there is no centralized purchase of needleless connectors.

The aim of this study was to detect

- the extent of needleless connector used in our region
- which devices were used, and why a particular device was chosen?
- management of connectors.
  - Safety
  - Guidelines
  - Education
- special problems related to transfer of patients - how units less specialized were informed about management of the devices
- Can we reduce cost by centralized purchase?

Methods:

All hospitals and wards in Western Norway Regional Health Authority were invited to participate in this study. Electronic questionnaires were sent to the head nurse at every somatic ward. Responding wards were divided in "regular users", "occasional users" and "never users". Infection control nurses conducted semi structured interviews of the head nurses or the specialist nurses in selected wards. Information from the interviews was compared with the purchasing data from the wards.

Results:

Data collection and interviews are ongoing. The results will be presented at the annual Norwegian conference on infection control in October 2009.

Methicillin-resistant *Staphylococcus aureus* Screening practices in GRE+ patients P14

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Introduction

Since 1988, glycopeptide resistant enterococci (GRE) have become an important cause of colonization and nosocomial infections. The major risk is to transmit the resistance to methicillino-resistant *Staphylococcus aureus* (MRSA). Since 1992, this phenomena's has occurred and each time the patient was a GMRSA (glycopeptide and methicillin-resistant *Staphylococcus aureus*), dead. The aim of this study is to assess the MRSA prevalence of the hospitalized GRE+ patients.

Material and methods

455 patients were detected GRE+ in the University Hospital of Nancy between the 1st January 2005 and the 30 September 2008. For each included patient,

we have extracted from the clinical bacteriological database all samples performed for the research for MRSA colonization. Age, sex, date of screening, site of positivation were extracted.

Results

The average age of the population was 72.2 +/-15.9 years with 216 males (48%). MRSA was searched after the knowledge of the GRE status in only 65% of cases (294 patients) and screening was done in the first 7 days for 43%. For 42 patients, MRSA status was known before the knowledge of the GRE status (5 patients were positive for MRSA before becoming GRE positives), but no searched after the GRE positivation. A total of 67 patients (23%) were found MRSA positives after the GRE positivation. The site of MRSA positivation was rectal (159 patients - 54%).

Conclusion

A MRSA screening was not systematically and quickly realized in the GRE+ patient as recommended. In this case the risk to observe an eventual GMRSA is higher and not controlled.

P15 Molecular epidemiology of MRSA isolated from surgical site infections.

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Aim

Genotypic analysis of methicillin-resistant *Staphylococcus aureus* strains isolated in St. John Grande Hospital in 2008 and from an outbreak in 2006.

Methods

From January to December 2008 22 MRSA strains were isolated from hospitalized patients. 14 strains were isolated from the wound of different patients in the department of vascular surgery (SV). All patients had surgical site infections. Additionally we checked 4 strains from patients in the intensive care unit (ICU) and 4 strains from patients in the internal diseases department (ID). These strains were compared with 9 MRSA strains isolated from patients and staff during an outbreak in November 2006. All staff that had MRSA nasal carriage were treated by topical mupirocin - control studies were negative. Strains were compared by pulse-field gel electrophoresis (PFGE).

Results

From 9 MRSA strians during an outbreak in 2006 the following were detected: pulsotype A - 2 patients and 3 personnel (one surgeon and two nurses) in the VS; pulsotype B - 2 nurses in the ICU; pulsotype C - patient in the ICU (2 strains). Pulsotype A was found in 8 patients in the VS, in 1 patient in the ICU (3 strains) and 1 patient in the ID (2 strains); who were hospitalized in 2008. Other 9 strains isolated in 2008 were characterized by different restriction patterns.

Conclusions

Molecular study showed the domination of one strain of MRSA. Next step will be the introduction of periodic control of MRSA nasal carriage in staff.

P16 Outbreaks of meticillin resistant Staphylococcus aureus (MRSA) at Rigshospitalet

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Bakground

Spread of MRSA in hospitals is still a considerable problem in globally. In this study we analyzes four outbreaks.

Methods

All patients with MRSA have been recorded. Other data has been obtained from the microbiology database.

Results

Rigshospitalet is a tertiary hospital with about 65,000 patient admissions per year corresponding to about 420,000 patient days and 450,000 outpatient consultants per year. In the 6 years period 138 patients with MRSA were observed. This is about 1% of the patients with *S. aureus* or 0,0004% of all admitted

patients. In these period four outbreaks has been observed:

1. an adult tetraplegic transmitting MRSA to another patient,
2. an adult mutitrumatic patient transmitting MRSA to two nurses,
3. a child with burn wounds transmitting MRSA to two nurses and
4. a neonate child transmitting MRSA to 6 other neonate children and a nurse.

Discussion

In all four episodes were the index patient carrier of MRSA without infection and they had all extraordinary close contact to nursing staff. It is, therefore, important to identify MRSA carriers among patients with intensive close contact to nursing staff. In areas with high prevalence of MRSA surveillance screening of these patients may be a possibility, but it is not cost-beneficial in areas with low prevalence of MRSA. It was not possible to pin-point any common risk factors that could limit the number of patients that should be screened. It is thus important to analyze the local situation to establish infection control precautions locally.

P17 Nosocomial infections with *Legionella* spp and other water borne bacteria can be reduced by control of shower water

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Background

Nosocomial infections with *Legionella* spp and other water borne bacteria together with infection control precautions to prevent these has been studied for almost 10 years at Rigshospitalet.

Methods

Showerheads and shower tubes has been studied "in vitro" in the laboratory and "in vivo" in the units to establish the time for biofilm formation by swaps and germ count. The numbers of blood borne infections caused by water borne bacteria were recorded. Infection control precautions:

1. let the water run before shower,
2. decontamination of showerhead and shower tube, and
3. showerheads with sterile filter.

Results

Letting the water run for 10 min before use resulted in an increase in the bacterial count in 60% of the showers. Experiments in the units showed that biofilm occurred within two days and daily decontamination of the showerheads and shower tubes were necessary to keep the germ count similar to tap water. Hereafter, nosocomial infections with *L. pneumophila* and *P. aeruginosa* continued in some units. In these units showerheads with sterile filters were introduced. In units using showerheads with sterile filter, a significant decrease of more than 50% in the number patients with *L. pneumophila, P. aeruginosa, Acinetobacter* spp. or *S. maltophilia* in blood cultures were observed.

Conclusion

It is possible to reduce the number of nosocomial infections caused by water borne bacteria such as *Legionella* spp., *P. aeruginosa* etc. by selective infection control precautions as heat decontamination of showerheads and shower tubes and use of showerheads with sterile filter.

Antibiotic Policies to Control Antibiotic Resistance P18

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Many attempts are targeted to restrict the use of antibiotics in hospitals due to the increased concern and awareness of antibiotic resistance worldwide. The restricted antibiotic guidelines are a step towards the up gradation in the antibiotic policies in hospitals. A recent Cochrane review confirmed previous reviews indicating that modulating prescribing antibiotherapy can reduce resistance, since its occurrence follows the Darwinian theory of evolution and survival of the fittest, suggesting the selection and maintenance of MDR bacteria as a consequence of prolonged and persistent exposure to

antibiotics. Now the question could be: Is-it possible to control MDR bacteria with antibiotic policies? A multi-centric study including three medical centers would answer to the previous question through descriptive studies of antibiotic usage. In the three hospitals the use of antibiotics was according to policies in two of them, although not properly implemented in one, and in the third hospital the antibiotic policy was not formulated yet. Results were illustrated and recommendations were put in order to find out a solution to such a critical problem facing all infection control professionals in our country.

P19 Pandemic Preparedness of Avian and H1N1 flu, experience from Egypt

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Pneumonia is identified by the Canadian Lung Association (2003) as inflammation or infection of the lungs. Invasion of the bronchial tract with virulent microorganisms usually leads to lower respiratory tract infection. The characteristic symptoms include cough, which soon becomes productive, pleuritic chest pain and fever. In atypical pneumonia, the cough remains dry while the fever is characteristically recurrent. Emergence of infectious diseases which spread globally has become a threat. During the past few years, the public has become aware of the pandemic of the Acute Respiratory Distress Syndrome "SARS", nowadays, an old foe has raised his head again reminding us with the worst nightmare, which is not a new one. A highly pathogenic strain of the avian flu virus "H5N1" crossed from birds to human and caused fatal disease. Next "Cocktail" Virus - Swine, Avian & Human Flu is now spreading allover the world. In late March 2009, cases of human infection with H1N1 virus were 1st reported(swine source unknown) This viral infection that occurs in pigs rarely infect humans, however this new virus of H1N1 is highy spreading from person to person. Have we responded to these threats by better preparing for emerging disease agents, or are we continuing to act only as crises arise?! We would consider a progress to date in preparedness for an influenza pandemic and review what remains to be done, as a part of this global threat of pandemicity.

The importance of cleaning for efficient disinfection - as shown by experimental evidence P20

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Introduction

A rule in medical hygiene says that without efficient cleaning there is no reliable disinfection. This rule is often cited but was not very often proved by experimental studies. One comprehensive study on cleaning and disinfection of human waste containers (HWC) was published by us in 1981. Recently, we studied systematicly the interference of soil residues with the effect of hot water disinfection.

Methods

E. faecalis or *B. subtilis*-spores were exposed to hot water at specified temperatures and durations, whereby the microorganisms were suspended in phosphate buffered saline or in a mixture of starch and protein (MNE-testsoil), in the latter either freshly suspended or pre-dried between 2h and 7days. Tests in fluid were run in a PCR thermocycler, additional experiments with fluid suspensions and with predried carriers were run in a machine specially designed for this purpose.

Results

Suspension of micoroorganisms in testsoil enhanced their tolerance against heat by 1 log (range 0-1.5), and this effect increased to 2.3 log (range 0.5-4.2) when the bacteria-soil-mixture was allowed to dry before heat exposure.

Conclusion

Such findings emphasise the prominent role efficient cleaning has in disinfection machines for HWC. Considerable transmission risks would incur when naturally thermotolerant agents (Norovirus, *C. difficile*-spores) meet insufficient processing of HWC. Specific

precautions for such situations are discussed as well as indispensable prerequisites for efficient cleaning in disinfection machines.

P21 Hand Hygiene Compliance: An evaluation in a teaching hospital

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Introduction

Hand hygiene is the most important measure to decrease the rate of transmission of nosocomial infections. The compliance to this procedure, however, is frequently low. Different reasons may explain these poor results. We wanted, through this study, to evaluate the level of compliance in our hospital.

Methods

An audit was created, based on the observation of nursing and medical staff in their work environment. 400 evaluations were carried out, on the three work shifts, among our healthcare workers. Compliance with hand washing or cleansing was observed on the following care sequence: before and after contact with patients, after contact with the patient environment and after glove removal.

Results

A relatively high number of staff didn't clean or wash their hands properly during these 4 observed steps of this patient care sequence. The most frequent mistakes were noticed before patient contact and after glove removal. In these cases, staff frequently considered their hands as clean with no need to wash or clean with the hand antiseptic. Even if they were observed, which should decrease the rate of mistakes, a high level of deficient hand hygiene was noticed. Complete data will be presented.

Conclusion

In spite of the large information made around the importance of hand washing, a high level of inadequate compliance was observed. We will talk about eventual strategies that could be adopted to increase this compliance.

Evolution of antimicrobial resistance in the South-Western part of Romania P22

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Introduction

As other European countries, Romania has to confront one of the major issues facing medicine today, the phenomenal increase in antimicrobial resistance (AMR) among opportunistic pathogens, especially in patients hospitalized in high risk departments.

Aims

This study make a retrospective analyze of the evolution of AMR in the Intensive Care Unit (ICU) of Timisoara Emergency Clinical County Hospital, during a 5-year period.

Methods

After collection of specimens and identification of bacteria at the level of hospital laboratory, multidrug resistant (MDR) strains have been sent to the University Clinical Microbiology Laboratory. There, confirmation tests were performed first on API system (BioMerieux) with disk - diffusion susceptibility tests (CLSI standards) using manual and automatic (Osiris -Bio Rad Laboratories) reading methods. From 2009, identification, susceptibility tests and phenotypic patterns were performed on Vitek 2 compact analyzer (BioMerieux).

Results

A decreased prevalence of extended spectrum beta-lactamases (ESBL) producing *Klebsiella pneumoniae* (from 62% in 2005 to 49% in 2009) was noticed. The MRSA prevalence remains stationary (50%). Increasing prevalence of ESBL producing *E.coli* (from 19% to 37%), carbapeneme - resistant *Pseudomonas* spp. (from 12% to 34%) and increasing associated resistance patterns in almost all selected bacteria were also recorded.

Conclusions

The management of nosocomial MDR pathogens involve a huge cost, therefore, the antibiotic policy in our hospitals has to improve, because it is more efficient to invest in the control than in the treatment of these infections.

P23 Management of needlestick and sharps injuries and exposure to body fluids of medical personnel

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Aims

To assess the frequency and possibilities to manage X hospital medical personnel's needlestick and sharp injuries and exposure to blood and other body fluids.

Methods

An anonymous interrogation of medical workers. 250 questionnaires were distributed 201 questionnaires returned (the frequency of response is 80.4%).

Results

During the preceding twelve months 36.8% of the respondents experienced needlestick and sharp injuries and 55.7% of them experienced exposure to body fluids. The latest exposure with body fluids prevailed among nurses (63.5%). Needlestick and sharp injuries prevailed among workers of surgical departments (46.0%) when compared with therapeutic departments (30.9%). The main causes of injuries were: work overload (33.8%), inattentiveness, hastiness (45.9%). The majority of the respondents (75.9%) knew how to behave having experienced a needlestick and sharp injuries or exposure to blood or other body fluids. 22.2% workers of the surgical departments who are under the greatest risk of experiencing injuries or exposure to body fluids were vaccinated with three doses of HB vaccine.

Conclusions

During the preceding twelve months 36.8% of the respondents working in increased risk departments suffered from needlestick and sharp injuries, 55.7% experienced exposure to blood and other body fluids. The latter was most commonly experienced by nurses. The greatest risk to experience the above mentioned injuries was found for nurses and doctors working in operation and procedure rooms, working with instruments that had been used for treating patients. Registration of needlestick and sharps injuries and exposure to blood and body fluids is carried out insufficiently.

Mouthcare in ICU - because it makes a difference P24

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Bakground

In 2006 a prevalence study in ICU showed that there was a high prevalence of Ventilator Associated Pneumonia (VAP) and a low frequents of mouth care among ventilated pa-tients. More than 50% of all HAI in the ICU had a VAP. I asked the nurses in ICU by questionnaires and interviews, what they have a knowledge they had about mouth care to protect VAP and found out, that there was a lack of knowl-edge among ICU nurses. And they didn't document how often they performed mouth care for the patients They didn't use clorhexidine in mouth care.

Methods

In 2007 I teached the nurses and had help from the key nurses to implement mouth care among ventilated patients. One year after implementing mouth care and a better documentation I tried to make the nurses to do an incidence study on all ventilated patients. It did not

work. So I decided to make an other prevalence study. I gather data from 1st of May until 30th of September.

Summary

If you want to have data from a department, you have to collect them yourself. Until now it seems like there is a higher rate of performing mouth care among ventilated patients - and all other patients as well. I still don't know if it has an influence on VAP, so by now there are no results.

P25 Active immunoprophylaxis of healthcare workers at Vilnius University Hospital Santariskiu Klinikos during 2003-2008

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An active immunoprophylaxis program of healthcare workers has been established since 1998 at Vilnius University Hospital Santariskiu Klinikos. Firstly, the medical staff with a hight risk of exposure to hepatitis B virus (HBV) was vaccinated: the surgical profile medical staff, the Anesthesiology and Intensive Care Unit medical staff, also medical service engineers. Since 2003 vaccination of all medical staff who has exposure to blood and other body fluids, as well as employees who agreed to be vaccinated has begun. During 2003-2008, 536 members of the medical staff received the full course of vaccination (3 doses of the hepatitis B vaccine) and serological blood testing for anti-HBs was performed for these employees. Vaccination was offered to 963 employees, however, 237 of them refused to be vaccinated. The aim of this program - to ensure safety of employees during occupational exposure from VHB, VHD (delta hepatitis), to minimize the costs of postexposure prophylaxis. Methods. The data for analysis were taken from: Hepatis B vaccination agreement/refusal forms case-records the Centre of Laboratory Diagnostics of the hospital, the Laboratory of Microbiology "Micropartical enzyme immunoassay (LEIA) for determination of infectious diseases markers" tests. Analysis of the statistical data obtained was perfomed using statistical program EPI INFO 6.04. Results: After vaccination, immunity against HBV developed in 451 (84.1%) employees. The incidents data: In 2003 out of 15 (68.2) vaccinated employees anti HBs was found in 9 (60%) cases. Determined medium anti HBs titre - 215 mTV/ml (min - 0 mTV/ml (1 healthcare worker), max - 1000 mTV/ml, mediana - 137 mTV/ml). In 2004, out of 23 (95.8%) vaccinated employees anti HBs was found in 22 (95.7%) cases. Determined medium anti HBs titre - 616 mTV/ml (min - 0 mTV/ml (1 healthcare worker), max - 1000 mTV/ml, mediana - 660 mTV/ml). In 2005, out of 29 (78.4 %) vaccinated employees anti anti HBs was found in 27 (93.1 %) cases. Determined medium anti HBs titre - 549 mTV/ml (min - 0 mTV/ml (2 healthcare workers), max - 1000 mTV/ml, mediana - 418 mTV/ml). In 2006, out of 22 (73.3 %) vaccinated employees anti HBs was found in 22 (100 %) cases. Determined medium anti HBs titre - 648 mTV/ml (min - 14 mTV/ml (1 healthcare worker), max - 1000 mTV/ml, mediana - 1000 mTV/ml). In 2007, out of 25 (53 %) vaccinated employees anti HBs was found in 25 (100) cases. Determined medium anti HBs titre - 540 mTV/ml (min - 12,1 mTV/ml (1 healthcare worker), max - 1000 mTV/ml (1 healthcare worker), mediana - 418 mTV/ml). In 2008, out of 23 (63.9 %) vaccinated employees anti HBs was found in 23 (100 %) cases. Determined medium anti HBs titre - 1879 mTV/ml (min - 14,2 mTV/ml (1 healthcare worker), max - 10487 mTV/ml (1 healthcare worker), mediana - 1000 mTV/ml) During 2003-2008, 192 vaccinated employees had exposure to body fluids. Out of 192 employees: 160 (83.3%) were vaccinated with 3 doses, 23 (12 %) - with 2 doses, 6 (3.1%) -with 1 dose, 3 (1.6%) employees were vaccinated with 5 doses. Conclusion: During 2003-2008, 237 employees refused to be vaccinated: 210 of them - without any clear reason, 27 of them had a reason: persons who have suffered from VHB in the past, persons who got immunization in other hospital and etc. There is no fully formed attitude of the medical staff in our hospital on the vaccination with an intention to protect their health from occupational exposure. Visual measures are necessary for the understanding of the medical staff that incidents are not predictable and often unavoidable in our work.

P26 Nosocomial infection surveillance in Intensive Care Units at Vilnius University Hospital Santariskiu Klinikos during 2004-2008

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Introduction

Control of nosocomial infection in ICU is an significat measure to improve patient safety. Realiable data are needed to set priorities especially in not high resurse countries. Therefore an active nosocomial infection surveillance system was initiated in 2 Intensive care units (ICU) - to observe tendencies of nosocomial infection rates, to identify the outbreaks, to determine the nosocomial infections risk factors and to evaluate efficacy of infection control's measures. The main aim of our study was to evaluate nosocomial infections rates and determine pathogens.

Methods

All case histories of patients who were hospitalized in two ICUs: I ICU - general surgery and II ICU - cardiosurgical during 2004-2008 were analysed. The data for analysis were taken from: case histories data registration form "Nosocomial infections surveillance in Intensive Care Unit". Analysis of the data obtained was perfomed using statistical program EpiData.

Results

The most frequent nosocomial infections in the I ICU were: in 2004, surgical site infections (SSI) - 30 (36.6%) cases, bloodstream infections (BSI) - 24 (29.3%) cases, pneumonia - 18 (22%) cases in 2005, SSI - 39 (41.1%) cases, BSI - 30 (31.6%) cases, pneumonia - 17 (17.9%) cases in 2006, BSI - 20 (34.5%) cases, urinary tract infections (UTI) - 15 (25.9%) cases, SSI - 14 (24.1%) cases in 2007, BSI - 35 (44.3%) cases, SSI - 20 (25.3%) cases, pneumonia - 18 (22.8%) cases in 2008, SSI - 35 (33%) cases, BSI - 33 (31.1%) cases, pneumonia - 20 (18.9%) cases. The the most frequent nosocomial infections in the II ICU were: in 2004, BSI - 27 (75%) cases, pneumonia- 5 (13.9%) cases in 2005, BSI - 18 (62.1%) cases, pneumonia - 6 (20.7%) cases in 2006, BSI - 13 (50%) cases, UTI - 5 (19.2%) cases in 2007, BSI - 21 (55.3%) cases, pneumonia - 10 (26.3%) cases in 2008, BSI - 21 (60%) cases, pneumonia - 6 (17.1%) cases. The most frequently isolated pathogens of nosocomial infections in the I ICU were: in 2004, *Pseudomonas aeruginosa* - 13 (16.3%) cases, *Staphylococcus aureus* - 10 (12.5%) cases (out of them MRSA - 3 (30%) cases) in 2005, *Enterococcus* spp. - 26 (23.6%) cases, *Pseudomonas aeruginosa* - 20 (18.2%) cases in 2006, *Enterococcus* spp. - 19 (27%) cases, *Pseudomonas aeruginosa* - 11 (15.7%) cases in 2007, *Klebsiella* spp. - 10 (16.9%) cases, *Enterobacter* spp. - (15.3%) cases in 2008, *Enterococcus* spp. - 19 (27.9%) cases, other staphylococci - 8 (11.8%) cases. The most frequently isolated pathogens of nosocomial infections in the II ICU were: in 2004, Staph.coagulase (-) - 8 (42.1%) cases, *Pseudomonas aeruginosa* - 4 (21.2%) cases in 2005, *Enterococcus* spp. - 3 (20%) cases, *Serratia* spp. - 3 (20%) cases in 2006, *Enterococcus* spp. - 3 (12 %) cases, *Serratia* spp. - 3 (12 %) cases, Candida - 3 (12%) cases, *Pseudomonas aeruginosa* - 3 (12 %) cases in 2007, *Candida* - 6 (26.1%) cases in 2008, *Klebsiella* spp. - 5 (26.3%) cases, *Candida* - 4 (21.1%) cases.

Conclusion

We don't observed the significant variations of nosocomial infections rates during 2004-2008, so the represented data can be as the basic data of ICU nosocomial infections. Annual data analysis shows, that isolated pathogens of the nosocomial infections has tendency to change, so the special attention must be given to hands, instruments, environment, hygiene and for procedures asepsis technique requirements in these ICU with an intention to prevent the spread of the nosocomial infections into the other hospital departments, also to protect from the new cases of the cross infections.

P27 Community Factors of Healthcare-Associated Infection Risks in Rural Indonesia

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Introduction

Prevention and control of healthcare-associated infections (HAI) has long been addressed mainly as a clinical issue. Behavioural discussion has been minimal and mainly related to organisational behaviour. This study aims to fill the gap by exploring the impact of community-learnt behaviours and social influences on HAI risks.

Methods

We conducted a mixed-methods research in ten remote Indonesian healthcare facilities focusing on clinical hand hygiene practices, intravenous (IV) therapy and instrument reprocessing. We gathered qualitative data from interviews with, and observations of, 19 doctors, 164 nurses and 96 community members. We prospectively collected quantitative data of 1097 IV lines from insertion to removal. Data were analysed using the Grounded Theory approach (qualitative) and univariate and multivariate analyses (quantitative).

Results

Healthcare workers' (HCWs') behaviour paralleled the community's beliefs and practices. Poor community hand hygiene was mirrored by 20% clinical compliance. HCWs' and the community's shared concept of the "sick role" included IV line insertion to virtually all inpatients (92%), and 68% IV lines developed local complications. Beliefs in the superiority of injectables resulted in excessive IV line insertion, unnecessary use of IV vitamins and anti-malarials, and inappropriate reuse of IV catheters and needles/syringes. A "deprivation mentality" led HCWs to reprocess items unnecessarily with incorrect methods based on household practices.

Conclusion

Cultural and societal influences are crucial yet often neglected aspects in HAI prevention. In-service training should be supported with education of the community about the need for hand hygiene and the importance of minimising medical interventions to reduce associated risks.

Social and Behavioural Barriers to Rural Indonesian Healthcare Workers' Handwashing Practice P28

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Introduction

Most attempts to increase healthcare workers' (HCWs') hand hygiene compliance focus on awareness raising or facility provision. Few reports have analysed the behavioural context in which hand hygiene takes place or not, yet this contextual understanding is paramount for successful implementation of WHO's hand hygiene guidelines.

Methods

HCWs at ten remote Indonesian healthcare facilities were studied for three months. Social and behavioural factors of handwashing were identified from covert observation of HCWs' practices and semi-structured and in-depth interviews in healthcare facilities and in the community. These data were analysed using the Grounded Theory approach to identify barriers and enabling factors for handwashing.

Results

Clinical handwashing compliance was 20% (57/281). Three major influences on HCWs' hand hygiene practices were identified. Community factors: long-standing water scarcity and destruction of water projects led to the community's almost non-existing inherent hand hygiene habit. HCWs' internal factors:

most HCWs only had minimum education and training resulting in poor hand hygiene knowledge and attitude. Work condition factors: HCWs who wanted to wash their hands were frustrated by work conditions (severe patient overload, no running water, no managerial support). A few HCWs developed compensatory excessive hand hygiene, while others touched patients without hand hygiene or avoided touching patients altogether.

Conclusion

Mere facilities provision and in-house training are unlikely to produce long-term hand hygiene improvement. Strong social and behavioural barriers need to be addressed and overcome in hand hygiene guidelines for rural Indonesia. Long-term community education and managerial commitment for supportive working conditions are imperative.

P29 The certification process of infection preventionists in The Netherlands

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There are three milestones in the Dutch association on hygiene and infection prevention in health care (VHIG): the foundation (1973), the first training course (1982) and a position paper concerning 'Registration, certification and visitation' (1996). This paper included the following objectives: professional quality, transparency and improvement of patient care. In 1998 and 2001 registration of the infection preventionists (IP) took place, based on VHIG agreements. Meanwhile an accreditation program has been set up for future certification. An accreditation committee judged different trainings. The accreditation program was divided into five categories: conferences of IP associations, conferences of IP related associations, extra activities for the VHIG, IP related trainings and industry training. Ten till 40 points were allocated per conference/ activity. A registered IP has to collect at least 50 points per year (maximum 200), minimally in three categories, at least 500 points within five years. To check feasibility of the accreditation program, two meetings were organized between representatives of regional groups and the accreditation committee during the first five years. The outcome of these meetings was that it was manageable for IP's to collect sufficient points. Evaluation of the whole process took place in 2007 and some adjustments have been made. Hundred and sixteen registered IP's were certified in 2006, 25 were not certified because of several reasons. By now the VHIG has 270 certified members in a public register.

Comparison Dot blots and culture method to detection Leishmania antigen within naturally infected sandflies in Abardej, Iran P30

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Leishmaniasis is a worldwide infectious disease. Leishmania. spp is found in the tropical and subtropical areas of Asia, Africa, and South America. cuntaneous Leishmaniasis is a major health problem in many rural in several provinces of Iran. Different methods were used to identify Leishmania antigen from natural foci of zoonotic cutaneous Leishmaniasis and vectors. We used Dot blot immunoassay for detection leishmanial antigen in the natural infection phlebotomus with comparison culture method. Of specimens 22.2% were positive in culture media, 37.5% were positive by Dot immunoblot. We can detect 10 ul of leishmania antigen in by Dot blot. This difference was statistically significant ($P<0.005$). Dot blot assay is considered a very discriminatory system for detecting Leishmania infection in fielded study and screening test. The Simplicity, reproducibility, high sensitivity and high specificity of the assay show determining the prevalence of sandfly infection

P31 The use of ozone and UV-light for controling an ITU outbreak caused by carbapenem resistant *Acinetobacter baumannii*

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Introduction

Multi drug resistant *Acinetobacter baumannii* (MDRAB) frequently causes outbreaks. The only available antibiotics are colistin and tigecycline.

The purpose of this paper is to report

- the extended environmental contamination
- the use of ozone and UV light for controlling the outbreak

This is the first report on ozone and UV-light for controlling an outbreak.

Nine of ten ITU patients acquired MDRAB, and in six cases detected in wound, urine and/or bronchial secretions. Five patients were treated with colistin/tigecycline. Five patients died from unrelated causes. Patients had daily chlorhexidine whole-body washing and the ward cleaning included chlorinated detergent. UV-light air decontaminators were in use.

Intervention

The patient's immediate vicinity was heavily contaminated with MDRAB. Twenty-four of 69 swabs were positive, however, all from "touch areas". None of 19 swabs from non-clinical areas were positive.

The ITU was then fumigated with ozone (6 ppm, 15 min). Colonised/infected patients were moved to a section completely separated and with own nursing and medical staff. No further spread was seen. The ozone fumigation was repeated when all patients were discharged.

Conclusion

This is the first reported successful management of an outbreak using ozone and UV-light. In contrast to previous experience the MDRAB contamination was confined to the patients' immediate vicinity sparing "non-touch" and non-clinical areas. By reasoning, the UV-light air decontaminator has eliminated the airborne transmission leaving transmission to direct contact. Ozone fumigation prevented environmental re-colonisation of patients and staff which was not achieved using chlorinated detergent.

Microbial surveillance of nosocomial septicaemias in a general hospital of northern Italy P32

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Background

The nosocomial septicaemia is an important problem for the patients and for the economy of the hospital. The possibility of monitoring is very useful in order to have the problem under strict control.

Aim of the work

We wanted to verify the accuracy and the usefulness of a simple method to register the results of blood cultures sent to the microbial laboratory of our hospital.

Material and methods

Codified name, age, sex, hospital Division, diagnosis, presence of vascular or bladder cathether, number of vials sent to the Laboratory for blood culture, possible antibacterial therapy have been registered on a specific Excel sheet during 2007 year. The indication of possible nosocomial septicaemia was also added if the blood culture was sent at least 3 days after to the hospital admission.

Results

11853 patients are admitted to the surveillance from different hospital's Divisions. 395 cases of possible septicaemia have been found: 119 were nosocomial with isolation of 33 microrganisms (27.7%).

Conclusions

The percentage of nosocomial septicaemias is higer in Rehabilitation Department (1,5%) in comparison with Medicine (0,19%) and Surgery (0.22%).

Staphylococcus aureus has been the most frequently isolated microrganism in nosocomial septicaemias. Vascular and bladder catheter has been found as an important risk's factor of septicaemias. Our system of registration of the microbial data using Excel has been very simple and easy to perform.

P33 A New Operating Room Procedure for Reducing the Rate of Surgical Site Infection

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The objective of the present study was to assess the utility of a new method of intraoperative practice for the prevention of surgical site infection (SSI) developed by a group of operating room nurses at Ramathibodi hospital. Subjects consisted of patients undergoing high-risk surgical procedures, defined as opened hepato-biliary-pancreas and colon procedures, at Ramathibodi hospital during the period from January to June 2005. There were 121 patients, 43 of whom underwent multiple-organ procedures and were excluded from the analysis. Of the 121 patients, 78 patients were eligible for the study. All patients were examined for evidence of wound infection until hospital discharge. A follow-up medical chart review was performed at 30 days after the primary operation. Only 65 patients had complete medical records up to 30 days after operation 13 patients did not have available medical records. Of the 65 patients, 8 had SSI, giving an overall SSI incidence of 12%. There were 22 and 43 patients in the new and old practice group, respectively, with 1 and 7 SSIs in the respective groups, giving the SSI incidences of 5% and 16%. The present study showed that the new method of intraoperative practice can reduce the incidence of SSI by 69% , compared with the traditional method. Key word : surgical site infection.

P34 Reduction of catheter-associated urinary tract infections at Udonthani Hospital, Thailand

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Background

Catheter-associated urinary tract infections (CAUTIs) has been the most complication of the indwelling urinary catheter patients. The incidence of CAUTI at Udonthani Hospital had more increase than the past fiscal year and we have many problems of practices of the patient care.

Objective

To reduced the incidence of CAUTIs.

Research method

It was an action research. The datas were collected by head ward nurse observation about personnel compliance of the indwelling urinary catheter patient care in 7 wards at Udonthani Hospital. There were 2 periods of the observation, before and after personnel group sharing knowledge from April to September, 2008. The CAUTIs had been prospective surveillance in the same period.

Interventions

Small group sharing knowledge.

Results

We found the score of personnel guideline compliance increse after having group sharing knowledge. The personnel compliance scores in the first period were proper indicator for insertion urinary catheter 85.71%, prepared urinary catheter set 79.52%, the technique of inserting urinary catheter 86.73%, and indwelling urinary catheter care 81.76% that were increase to 87.10%, 98.39%, 99.10% and 93.73% respectively. The incidence of CAUTIs were decrease.

Conclusions

To promote personnel compliance for indwelling urinary catheter patient care by group sharing knowledge had more effective patient of care and reduce the incidence of CAUTIs.

P35 Important changes in dynamic balance and resistance of hospital eco system in surgical intensive care unit in the period of 15 years

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Continual monitoring of hospital ECO system and its antimicrobial susceptibility is an imperative in prevention of endemic hospital infection. The aim of this paper was to present the significant changes in dynamic balance and antibiotic resistance in the hospital ECO system of the surgical Intensive Care Unit in the period of 15 years (1991-2007). The results obtained have shown decreased isolation of gram negative bacilli from 90% (1991) to 63% (2007) and significant increased isolation of *Staphylococcus aureus*. Structure of microorganisms found in hospital setting during 1991-1994 was: *Pseudomonas aeruginosa* (41%), *Acinetobacter* spp. 2006-07: *Staphylococcus aureus* (32%), *Acinetobacter* spp. (27%), *Pseudomonas aeruginosa* (14%), and *Klebsiella aerogenes* (11%) *Proteus mirabilis* (9%), *E. coli* (5%). The analysis revealed that *Pseudomonas aeruginosa* was pushed out from the first to the third place, being replaced by *Staphylococcus aureus*, mainly MRSA (87% out of the total SA). There were endemic strains of enterobacteria (multiresistant *Proteus mirabilis*, *E. coli* and *Klebsiella aerogenes*), which had no significant importance in causing infection in ICU 15 years ago. *Acinetobacter* spp. has proved to be a very important hospital pathogen over the last 3 years within its population there has been an increase of strains of extremely multiresistant mutants that are susceptible only to imipenem (10% of resistance) and greatly enlarged resistance percentage to amikacyn (80%).

Conclusion

1. The MRSA has become a common nosocomial pathogen in investigated ICU instead of Pseudomonas aeruginosa.
2. Continual monitoring of ICU should be implemented in order to perceive changes in the ICU dynamic balance on time.

P36 Instructions for the operation of a MRSA-infected patient in Region Zealand (Denmark)

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I would like to present a poster regarding "guidelines in connection with surgery on a MRSA infected patient". In Denmark "The Danish quality model" is about to be implemented. This is a quality assurance and monitoring system. Included in this model is the fact that all guidelines and procedures must be found in written form for each department. A model has been made for creating these and the presented poster has been made according to this model. In our surgical departments in Region Sjaelland we have, or will do, described all guidelines and procedures according to this model. It is an invaluable tool in our daily lives in order to quality secures in our treatments. Furthermore the poster will describe our guidelines in connection with the surgery on a MRSA infected patient. MRSA is more and more common in most European countries. In Denmark, we still have a low incidence of MRSA-infected people, and we want to maintain that status for as long as possible. The centre of national Health has prepared a guide to preventing the spread of MRSA. The guidelines in this "Poster" is based on these. It can be used as an inspiration to describing local guidelines to ensure a high level of perioperative nursing quality. Thereby the risk of spreading MRSA to staff and patients can be reduced. In the future, these guidelines will be applicable in general. There are always new multi-resistant bacteria, and it is hard to see if a patient is infected or not.

P37 Evaluation of Microbial Inactivation by Caustic Digesters using Embedded Test Samples

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Introduction

Caustic digestion is based on alkaline hydrolysis, which involves the use of sodium or potassium hydroxide to catalyze the hydrolysis of biological tissue materials at elevated temperatures and pressure. The studies presented are the first to most closely simulate actual digester operations by using biological indicators in stainless steel capsules embedded in adult large animal carcasses (horses and cattle). Previous tests of the use of digesters in treating carcasses potentially contaminated with pathogens involved suspending the indicators along the inner wall of the digester. The present investigations were conducted using Progressive Recovery Inc. (PRI) thermal caustic digesters with capacities of 80 lbs (CDU-80) and 500 lbs (CDU-500) per cycle.

Methods

High concentrations of *Geobacillus stearothermophilus* spores (10e6) and *Mycobacterium terrae* vegetative cells (10e8) were seeded onto paper strips which were inserted into specially fabricated, sealed, stainless steel capsules. The latter were implanted into holes drilled into adult large animal heads or surgically inserted deep into the musculature, near the bones of larger portions of animal carcasses. Three separate test runs, each with a 3 hour residence time at 275°F, were conducted with each of the units. At the conclusion of each run, the biological indicator strips were removed from the capsules and packaged for shipment to an independent laboratory for quantitative evaluation.

Results

Field controls, i.e., strips containing both types of indicators that were shipped untreated to and from the test site, yielded from log 4.57 to 5.48 viable spores and from log 7.23 to 7.67 mycobacterial vegetative cells. Greater than a 4.0 log reduction of viable *G. stearothermophilus* spores was observed with all 10e6 spore strips treated within the carcasses. Similarly, greater than a 6.0 log reduction was noted with all 10e8 treated *M. terrae* samples embedded in animal tissue and bone.

Conclusions

Since the stainless steel capsules prevented the exposure of the biological indicators to the caustic solution, the inactivation of bacterial spores and mycobacterial vegetative cells is directly attributable to the heat and duration of exposure in the CDU-80 and CDU-500 PRI caustic digesters. These are the first tests to separate the treatment parameters responsible for microbial decontamination. In addition, these are the first in which indicators were implanted in animal carcasses to simulate digester operations.

P38 2009 Certification Board in Infection Control and Epidemiology (CBIC) Practice Analysis Survey

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The Certification Board of Infection Control and Epidemiology, Inc. (CBIC) is a voluntary autonomous multidisciplinary board that provides direction for and administers the certification process for professionals in infection prevention and control and applied epidemiology. CBIC is independent and separate from any other infection control- related organization or association. The certification process is based on the practice of infection prevention and control in North America. CBIC performs a practice analysis survey approximately every five years to assess the current practice of infection prevention and control. The survey is distributed to infection prevention and control professionals working in all healthcare settings in the United States, Canada and international countries. The results of the survey are used to develop the content outline for the certification exam. Although the last practice analysis survey was conducted in 2005, significant changes have occurred during the past few years in the practice of infection prevention and

control. To ensure the infection control certification exam focuses on current practice, CBIC made the decision to conduct the practice analysis survey in 2009 instead of 2010. For purposes of the survey, an infection prevention and control professional was defined as one who is responsible for the: "Planning, implementation, and evaluation of infection prevention and control measures "Collection, analysis, and interpretation of epidemiologic data relative to infections and "Investigation and surveillance of suspected infection outbreaks. This poster will describe the survey development process and the findings of the survey.

P39 The effectiveness of automatic and manual cleaning of hospital beds

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Background

When frequent hand-touch surfaces from clinical and non clinical areas are microbiologically surveyed, bed frames are among surfaces that yields a high total viable count. Aerobic colony count sampling (ACCS) in combination with residual adenosine triphosphate (ATP) has been proposed to evaluate cleaning procedures in Hospitals.

Objectives

Cleaning regimens for hospital beds were evaluated using either an automatic washer or a manual procedure.

Methods

Dipslides were chosen for ACCS. Two set of pass/fail levels (2.5 cfu/cm2, <2.5 cfu/cm2) were used for ACCS based on control charts (and six sigma principle) prepared after careful cleaning of critical and non critical surfaces. The ATP residual swap test used "Cleantrace" swabs and an Uni-Lite NG luminometer. The ATP pass/fail level was 50 x 10-15 mol ATP per 100 cm2 (the six sigma principle)

Results

Aerobic colony count: After automatic bed washing: 20 bed frames, 20 bed guards and 10 balkan beams passed the <2.5 cfu/cm2 levels for aerobic colony count After manual bed cleaning: 40 Bed frames: 36.4% failed the <2.5 cfu/cm2 level and 18.2% the 2.5 cfu/cm2 level. 16 Bed guards: 12.5% failed the <2.5 cfu/cm2 level, but all passed the 2.5 cfu/cm2 level 8 Balkan beam: All passed the <2.5 cfu/cm2 level (Bed frames: p=0.001 and 0.045 respectively for the two pass levels) ATP measuring: After automatic decontamination: 98/100 beds passed. After manual cleaning: 92/100 beds passed. (p=0.041). Conclusion: In contrast to a manual procedure automatic cleaning of hospital beds ensured an uniform and satisfactory cleaning result.

Nosocomial infections due to metallo-beta-lactamase-producing Enterobacter cloacae P40

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Aim

To perform the molecular analysis of nosocomial outbreak caused by *Enterobacter cloacae* in St. John Grande Hospital.

Methods

Four cases of nosocomial infections were recorded over a period of one week: two cases of urinary tract infections and two cases of surgical site infections, caused by metallo-beta-lactamase-producing (MBL) *Enterobacter cloacae*. Two *E. cloacae* strains were isolated from wounds of 2 patients from the department of general surgery and two strains were isolated from urine of 2 patient from the intensive care unit. No *E. cloacae* were isolated from the environment. Strains were compared by pulse-field gel electrophoresis (PFGE).

Results

The molecular analysis showed that the same pulsotype was found in all patients.

Conclusions

This outbreak was caused by the same strain of *Enterobacter cloacae*. Probable cause of nosocomial infections was inadequate adherence to the patient care rules by the staff of the intensive care unit. Probable source of infection in the department of general surgery was a nurse who has been working in the intensive care unit – family ties between one of the patients and nurse. This study showed the important role of the hospital staff in the transmission of nosocomial infections.

P41 Epidemiological situation in tuberculosis in post-Soviet countries. New risk and solutions

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Tuberculosis (TB) still remains a major public problem in the world, with approximately 8 million new infections and 2,5 million to 3 million deaths per year. More than 95% of deaths from TB occur in the developing countries. The global incidence rate of TB is growing at approximately 1,1% per year and the number of cases at 2,4% per year. The global epidemic is growing and the spread of HIV, the emergence of MDR TB and the breakdown in public health services are adding to the impact of the disease. The movement of people around the globe is aiding the spread of tuberculosis. It is estimated that, if control is not further strengthened, approximately one billion people will be newly infected, over 150 million will get sick, and 36 million will die of TB between 2000 and 2020. Since the reemergence of TB from the mid-1980-s, there is an increasing number of drug resistant *Mycobacterium tuberculosis* strains throughout the world, particularly the multi-drug strains MDR While drug drug-resistant TB is generally treatable, treating MDR-TB requires up to two years and can be more than 100 times more expensive than treatment of drug-susceptible TB. Treatment of MDR TB cases is successful in only 52 % of new cases and 29 % of retreatment tuberculosis cases.